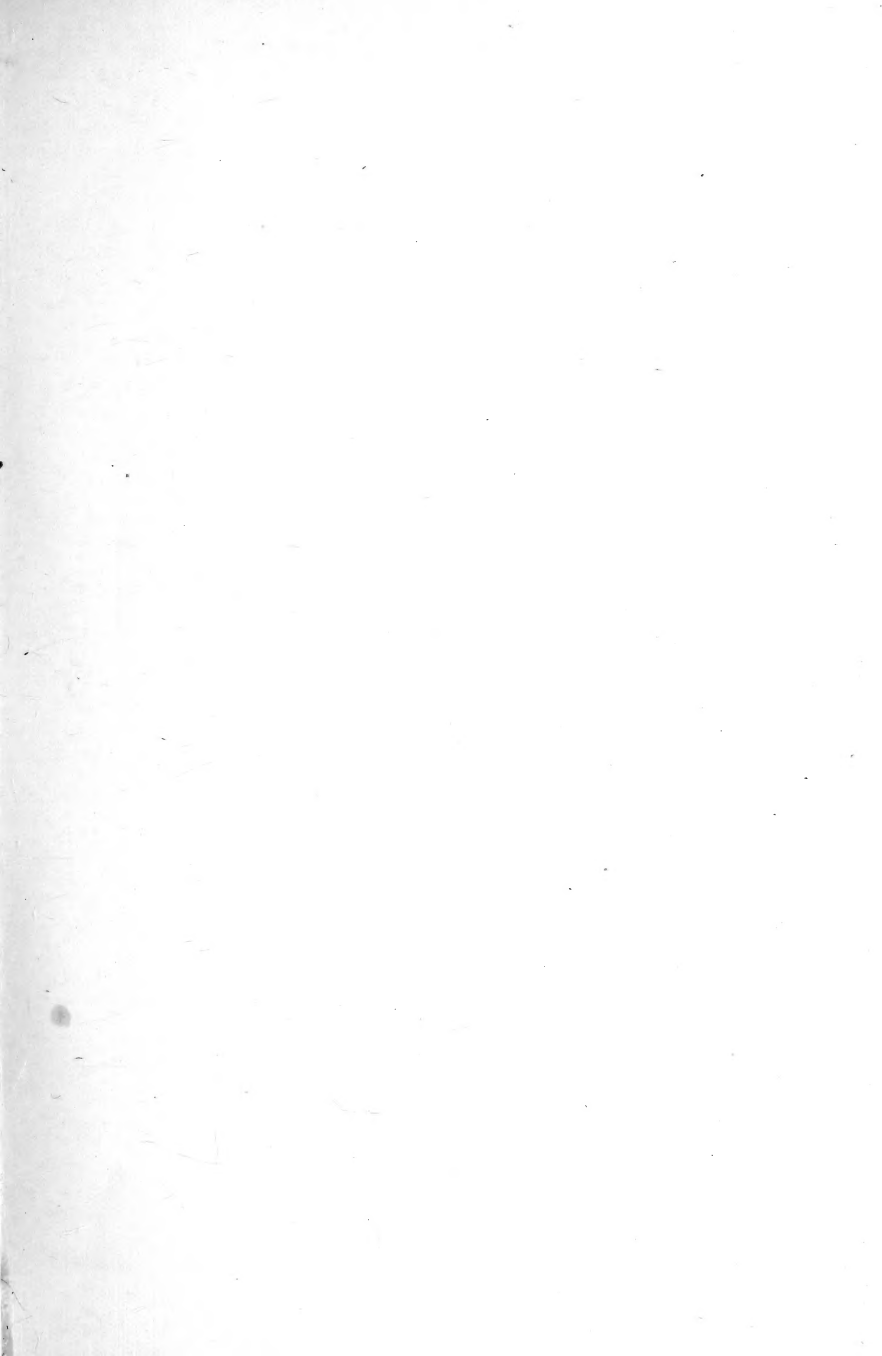


Mary V. Walcott

1924





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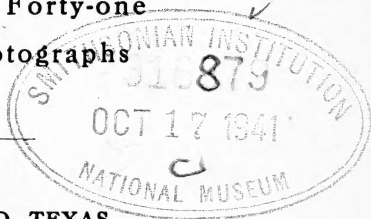
500 WILD FLOWERS OF SAN ANTONIO AND VICINITY,

BY

Quillin
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Illustrated by Forty-one
Original Photographs



SAN ANTONIO, TEXAS

1922

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ELLEN D. SCHULZ





Bluebonnet (*Lupinus texensis*), the official flower of Texas, an honor which it rightly deserves. As the Shamrock is to Ireland so is the Bluebonnet to Texas. (Photo by Dr. Elton Perry.)

PREFACE

This bulletin is a brief account of the Flora of San Antonio and its relation to the environment growing out of an effort to aid beginners in the High Schools of San Antonio in identifying and learning the habits and economic value of the flowering plants of this vicinity. It is intended to guide anyone who wishes to become better acquainted with our flowers. It recounts the most striking botanical features but does not attempt to give a complete ecological survey of the climatic and physical features. The sketches concerning each flower will place, as far as possible, the economic use, or promise of usefulness, of the plant, its poisonous or baneful qualities, obstruction or help that it yields to crops or pastures. Innocent plants wrongfully accused of being poisonous or being a nuisance will have their titles cleared. Old Mexican and Indian names are recorded when possible as important data in the plant's association with man. Furthermore, all, that is herein written, is offered as generous tribute to the wealth, beauty and splendor of Texas flowers and to San Antonio, the royal residence in court of the Southwestern floral kingdom.

There is no literature primarily for the Flora of this region. Coulter's Manual of Western Texas is very good but has been out of print now fully ten years. Small's Flora of Southeastern United States is too difficult and too bulky for anyone but the technical botanist, nor does it include all the plants in this region. All other works, including Lewis' Trees of Texas, Mackensen's Trees and Shrubs of San Antonio and Vicinity, and Young's Key to Families of the Wild Plants of Austin, Texas, are excellent but do not give information on the conspicuous flowering plants of this particular locality.

The territory includes the region in and about San Antonio and extending about twenty miles north of this city and as far as fifteen miles to the south. The work can be used farther in all directions in neighboring counties but the author makes no claims that it will be complete.

In describing the plants, the writer has dispensed with scientific explanations as far as possible. A few technical terms, however, have been used, and explanations of these may be found in the glossary. Magnifying glasses and other instruments are not necessary, but if used will open up a world of interest in plant mechanics, aesthetics, and biological philosophy.

The writer wishes to acknowledge indebtedness to Dr. Paul C. Standley of the United States Smithsonian Institution for checking all herbarium material: to Mr. B. C. Tharp of the University of Texas and Dr. Paul C. Standley for valuable suggestions and for correcting the manuscript; to Supt. Chas. S. Meek now of Toledo, Ohio, and Dr. Jeremiah Rhodes of the San Antonio Public Schools for their constant encouragement and for their generous kindness in granting the writer both freedom and time for research and field work; to Mr. and Mrs. J. P. Classen and Mr. P. J. Classen for the innumerable courtesies extended her while collecting on their ranches; to Mr. Arthur Dean for the map of Bexar County; to Josephine Huppertz Trenkman for drawings used in illustrations; and, to Mr. Roy Quillin, oologist, for his assistance in the field work and for widening the horizon of this work through his unusual powers of observation.

San Antonio, Texas.

9-1-21.

ELLEN D. SCHULZ.

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MAP OF BEXAR COUNTY, TEXAS

Scale
1 2 3 4 5 6 7 8 9 10

INTRODUCTION

LOCATION AND PHYSIOGRAPHIC FEATURES

The latitude of San Antonio is 29 degrees north. San Antonio is about 15 miles southeast of the Balcones Fault Line which divides the Great Plain to the north and west and the Coastal Plain of the south and east. The Edwards Plateau is the southern most Texas division of the Great Plain. San Antonio has an elevation of six to eight hundred feet.

The Edwards Plateau is characterized by limestone hills and intervening, wide, fertile valleys. The hills range in height from fifty to two hundred feet and are covered with a thin layer of poor dry clay soil. The majority of them are round-topped and have a terraced appearance due to the weathering of the alternating layers of hard and soft rock. Many have their sides broken by steep cliffs and ragged ledges. Short, deep, sharply-cut, rocky ravines break back into these hills and open down into rock-filled creek beds usually dry but with rains sometimes brimful for several days. As these storm waters run away, they leave pools and wet holes in the deeper depressions that offer residence for fish and frogs, and algae for weeks and months.

The Coastal Plains to the south are marked by rolling hills, much level land, flood plains, and the general absence of "floating rocks". The soil is much deeper than that of the Edwards Plateau and varies from a brown-gray loam to a reddish or white sand. The subsoil is alluvial gravel and clay and in many places is cut thru, forming steep high bluffs and deep gullies. A very small percentage of this land is under cultivation, the most of it being used as pasture land.

The Valley of the San Antonio River is drained principally by the San Antonio River and its few small tributaries. This river has its origin in the fissure springs north of Brackenridge Park and is a permanent flowing stream. On either side the course to the southeast is riverbottom land which serves as a

flood plain and for that reason is heavily wooded and seldom used for farming. The pecan tree thrives in these bottoms. The largest eastern tributary is the Salado Creek, formerly an intermittent stream. It is now a perennial stream, being supplied by one of the largest artesian wells in this country since 1912. The largest western tributary is the perennial stream, the Medina River. All the other tributaries are intermittent, containing running water only a brief time following rains.

Mitchell's Lake, the largest permanent body of water near San Antonio is fed by natural drainage and the sewers of the city of San Antonio. It is a marshy lake, covering some twelve hundred acres to which size it has grown in the past thirty-five years. Mr. H. P. Attwater of Houston visited the Lake in 1884 and described it as a big muddy water hole which could be waded in dry seasons.

CLIMATIC CONDITIONS

The mean annual rainfall for the years 1884 to 1919 is 26.94 inches, the minimum being 10.11 inches in the year 1917 and the maximum 50.30 inches in the year 1919. While there is no well defined rainy season, the largest amount of rainfall generally occurs in the months of April and May. A notable exception is the year 1919 when much of the rainfall was in June, July, September and October. Inasmuch as the amount of vegetation is directly dependent on the rainfall, San Antonio affords a "Hide and Seek" interest to her residents either as lovers of Nature or as ranchmen and farmers. When the rainfall is above the average and well distributed, flowers are abundant, crops are good, cattle thrive on the unusual amount of forage, and the fall bespeaks prosperity. With less rainfall, the character of the flora changes, crops are scant, cattle die in the pastures for lack of forage and water, and lean years follow.

The year 1919 was notable for the greatest amount of rainfall (50.30") recorded since the establishment of the San Antonio weather bureau. This resulted in an unusual quantity of flowers, and a general rank growth of vegetation seldom seen in

these regions. For example, fields of Winecups, Firewheels and Coreopsis were shoulder tall, and the thick growth was so matted together that a man could make his way through fields with the greatest difficulties. Bright-colored annuals appeared in most unusual places and were found in large numbers on tops of limestone hills, competing with the regular residents of these localities.

The colors of the flowers were noticeably deeper and richer. The explanation of this is a matter of considerable interest. It has been observed that plants with rich soil and plenty of water have leaves of deeper colors and these factors must affect the colors of flowers as well. In all probability there is also less fading and bleaching in cloudy weather by reason of the reduction of light, for under such conditions moths and butterflies also retain their richer hues.

Annuals bloomed much earlier. The blossoming period for fully one hundred plants usually maturing in April and May was extended into July. The fruiting season was correspondingly prolonged.

Animal life also luxuriated in this abundance of moisture. Insects were unusually numerous due probably to the long breeding season and the abundance of food. This unusual season was further marked by the increase of snakes, rodents and birds. Rattle snakes were so numerous that many of our keenest hunters gave up the sport on account of the danger.

In the early spring of 1919, there were practically no wood rats and few rabbits in the adjoining county, Atascosa, due to the droughts of 1916 and 1917. In the spring of 1920, these animals were so abundant that brush piles, clumps of prickly pear, and bunches of grass were honey-combed with their trails and nests. This close relationship between flora and fauna and rainfall was further shown in the increased number of eggs in the clutches of our wild birds.

DISTRIBUTION OF PLANTS OVER THE AREA STUDIED

As San Antonio is the meeting ground of the Edwards

Plateau and the Costal Plains, the difference in the flora of these regions is very striking. The limestone hills and rocky hillsides naturally support drought-loving plants and types with roots that can live in chalk or gain support in the thin residual layer covering the underlying limestone. Chief among the larger woody-stemmed plants and growing close together in dense motts are the blue-fruited, bushy mountain cedars (*Sabina sabinoides*), mountain laurel, wide-spreading, evergreen sumacs, stunted live and post oaks, Mexican persimmons with pale, smooth stems, and lance-leaved sumacs that furnish half of our Autumn's reds.

Growing on these same rock-strewn hills and hillsides, too, one finds a characteristic vegetation conspicuous for variety and depth of color. Early spring is announced by the bold redbud of the hillsides and the dainty violet hidden in the damp bottoms. Then follows a succession of blossoms, chief among which are slender-stemmed yellow daisies, Indian Paint Brush, yellow and purple-flowered buckeyes, shining buttercups, dainty pink pennyroyal clinging in the rocks, shrubby, purple skullcaps of the roadside, red-rooted New Jersey Tea, beardstongue, Heller's plantain, black haw, slender bear grass, the deep and variable shell pink melon-cactus, and yellow and orange flowering prickly pears. Brightening and livening the ledges of the bare rocks are the orange-yellow western wall flower and the scarlet salvia with roots buried in rocks and rich soil. The back grounds for much of this rich flowering is the drought enduring, glossy leaved cliff brakes, *Pellea atropurpurea*, *Pellaea flexulosa*, and *Anemia mexicana*.

Winding around these hills, very often are stony bottomed, dry creek beds with their groups of moisture loving plants,—scraggly sycamores, stubby growths of the Mexican walnut, slender stemmed, bushy, willow-leaved groundsel, and the fragrant flowered buttonbush.

In early summer, notwithstanding the intense heat and burning sun, one finds roadsides and pastures vivid with colors that even a tropical sun cannot fade. Here appear the purple scullcaps, Heller's Plantain, white rock daisies, golden asters,



Typical intermittent creek containing running water for a brief period following rains. The rich soil of the rock-strewn ravines in the background supports a varied vegetation, including redbud, wild plum, mimosa, buckeye, hop-tree, clematis, vetch, buttercups and phacelia. Growing among the rocks in the foreground are phlox, vetch, lace flower, balloon vine, wild onion, chickweed, speedwell, and many others. (Photo by Hans Specht):



Dry creek bed and limestone bluff of the Edwards Plateau. The creek bed in the foreground supports a scanty growth of moisture-loving plants,—scraggly sycamores, stubby growths of Mexican walnut, willow-leaved groundsel, fragrant-flowered buttonbush, and prickly-stemmed dewberries. On the rich irregular ledges of the broken bluff in the background one finds cliff brakes, wall flower, ragwort, scarlet salvia, prickly pear, Commelinantia, slender beargrass, rose mallow, spiderwort, Perezia and a host of others. In fact by working a series of these bluffs, one may take a good representation of the Flora of the limestone region.



Limestone hill of the Edwards Plateau. These hills range in height from 50 to 200 feet and are covered with a thin layer of poor dry clay soil. The majority of them are flat-topped and have a terraced appearance due to the weathering of alternating layers of hard and soft rock.



Cut thru "chalk hill", a typical locality for golden asters, white fall asters (*Aster exiguus*), rock daisies, *Salviastrum*, yellow daleas, blazing star, white prairie clover, actinella daisies, *Zexmania*, *Encelia* and winged sumac.

the slender stemmed thelesperma, purple horsemint, twisted leaved yucca, queen's delight, deep lavender, woody-stemmed daleas, and long-stemmed, yellow headed daleas of the white limestone hills. Covering the flat-topped rocks is the tiny, fleshy leaved stonecrop and pendant from the pockets of the vertical walls of limestone bluffs is the little yellow composite, laphamia.

Late fall also has charm. Unlike the autumnal reds and browns of the North, the earth is still bright with the colors of Spring. The chalky hills are tinted with a variety of blossoms ranging from violet-shaded blazing star, through golden asters, to tiny white asters crowded along shrubby stems, and wide spreading clumps of white mountain daisies. Ending the list in November is Eupatorium, a white flowered, spreading bush, hanging over ledges and rocks, and the violet aster of the ravines and shaded grounds. Evergreen sumac likewise when rainfall is abundant puts forth a second attire of white clustered blossoms.

To the south is a vegetation as varied and full of contrast as is offered by the hills and valleys of the north. Mesquite covers wide areas in the flats, forming thickets known locally as "mesquite flats" that thin out gradually as the ground rises into long even swells. These are frequently intermingled and bordered with patches of white brush. Here and there are cactus-covered hilltops, and scattered clumps of white brush, intermingled with thorny growths of brazil, lote bush, guayacan, lycium and catsclaw. Further to the southeast, scattered and mixed with the post oak, black jack, and bur oak is the hickory. Most common among the flowering plants, both in pastures and along roadsides are the white-flowered horsemint, Tiny Tim, wide spreading patches of white or pink evening primroses, thickets of long-flowered catsclaw, feathery-leaved acacias, yellow evening primroses dotting the weed patches of open fields, copper colored lillies and great stretches of fragrant yellow daisies (*Amblyolepis*).

The riverbottoms are heavily wooded with wide spreading

pecans, glossy-leaved cottonwoods, sycamores with pale, flaky trunks, spiny, gum elastics, warty-barked hackberries, willows, cypress with roots that drink from the water-soaked margins and beneath the stream bed, hawthornes, cedar elms, fragrant-blossomed plums, black walnuts, pale-leaved box elders and rank growths of poison oak, mustang grapes and woodbines. Other moisture loving plants growing here, are the fringy-rayed daisy-fleabane, white and pale-blue violets, thick mats of bedstraw, deep but delicately shaded red and purple verbenas, baby blue eyes, rough-leaved false gromwell, purple Dutchman's pipe (*Clematis*), the late flowing frostweed, and deep blue day flowers and their close relatives the purple spiderworts. Viewed from a hill, this dense growth of the river banks contrasts strongly with the thinner vegetation of the hills.

Mitchell's Lake Region shows the transformation that takes place on the margin of an increasing water area. The land now inundated was once typical mesquite country as is evidenced by the number of dead trees of this species still standing half buried throughout the numerous small bays and the shallower portions of the lake. Marking the progress of the Lake in its increased depth and area are the amphibious rattle bushes (*Daubentonia longifolia*). These plants vary from healthy full sized shrubs at the margins to equally large plants struggling for existence in a half buried condition farther out from the shore. Even in this half drowned condition, they continue to live for years and throughout the summer produce a wealth of hanging clusters of deep yellow butterfly-shaped flowers. The rapidity with which hydrophytic plants find suitable places for their development is of marked interest. Small islets of tules dot the lake in the shallower parts and cat-tails outline parts of the margin. Anchored to the marshy bottoms in the shallower and wind protected parts are a mass of floating plants—white pond lilies and yellow star grass, a member of the evening primrose family. Growing on the muddy shores or in shallow water are sedges, smartweed, heliotrope, sunflowers, reddish topped dock, water

plantain, squared-stemmed germander, and snowy-petalled bur-head (*Echinodorus*).

Vacant lots, alleys and waste places likewise may boast of a rainbow of colors. Earliest spring brings out the tiny white-flowered whitlow grass and the five-rayed yellow Texas stars. In the wake of these follow fragrant yellow, wheel-shaped daisies and *Engelmannia* similar to the *Lindheimera*s in habit but having eight yellow rays to each flower. As these mature and fade, large showy poppies dot the fields with blossoms that rival the snowflakes in whiteness, and verbenas and white and pink evening primroses spread over barren ground and hills and tint the fields with their patches of color. The hills are massed with bluebonnets, the State Flower, and sprinkled in the greens and livening railroad tracks and roadsides alike are the poppy-like wine cups. As these plants mature, another ambitious troop push their pale heads up to the sun. *Hymenopappus* freshens the fields with a white pearly covering that lasts into June, and niggerheads send up their velvety domes through their green mats and compete with their cultivated neighbors through their richness of color and design. In the adjacent fields are brilliant gay colored firewheels and sheets of golden coreopsis rivaling the sun in reflected radiance. July brings to valley and roadside miles of yellow, hiding fences and shrubs, for the sunflowers stand sentinel tall everywhere and make parks no less beautiful than those brought into existence through man's toil and design. Fall likewise keeps her neglected fields and waysides beautiful. Dead stems and faded foliage are concealed by prickly-stemmed yellow nightshades and tiny, yellow flowered broomweeds that produce a succession of blossoms until frost asserts her claims and ends their labor.

When Nature's gardner keeps up such a wealth of rainbow coloring as this in every alley, field and waste, is it at all surprising that Texans consider their State their greatest heritage?

NAMES OF PLANTS

Plants like people are given names by which they may be

known. All names are made up of two parts, the genus corresponding to the family name such as Smith and Jones, and the species agreeing with our customary baptismal name, as John and Mary, and functioning as an adjective. Better known are the common names similar to nicknames, and convenient for use in localities because they are more easily remembered by those not educated in botanical terminology. Spanish Dagger expresses more than *Yucca treculeana* and Blue Eyed Grass more than *Sisyrinchium angustifolium*. But when we speak of Texas Stars, anyone of the following plants may be included,—*Erythraea calycosa*, *Sabbattia campestris*, both pink members of the Gentian Family, or *Lindheimera texana* and *Engelmannia bipinnatifida*, two yellow composites. It will thus be seen that many misunderstandings may arise through the use of these names in the same locality or in different localities. The common larkspur is the “*espuela de caballero*” with the Mexicans; red-bud of one locality finds itself Judas tree of another locality; the ill smelling skunk-bush finds itself a hop-tree where the fruits are used as a substitute for hops; red mallows (*Malvaviscus*) in spring become Mexican apples in the fall; Bee blossom (*Gaura suffulta*) in certain counties is called wild honey-suckle and being a member of the evening primrose family is vastly different in structure from the true honeysuckle; the giant ragweed of Bexar County is the bloodweed of Travis County. It will thus be seen that while common names often are more descriptive than the scientific names, the latter are necessary when accuracy is required.

The genus names have their origin in many ways. Many are named from some characteristic common to a group of plants. Note the following: *Polanisia*, Gr. *polys*, many, *anisos*, unequal, from the stamens; *Bursa*, Lat. *Bursa*, purse, from the pod: *Erodium*, Gr. *erodius*, heron, from the shape of the fruit: *Saponaria*, Lat. *saponaria*, soap-like, from the soapy sap: *Stellaria*, Lat. *stellaria*, star-like, from the shape of the flower: *Eriogonum*, Gr. *erion*, wool, *gonu*, knee, from the woolly, jointed



Typical oak mott. Common north and northwest of San Antonio. These motts vary from those composed of a few trees to others which cover half an acre. Their value is appreciated more by animals than by man as the picture shows.



Typical mesquite pasture. The mesquites are usually surrounded by a growth of thorny shrubs, chiefly agarita, brazil, granjeno, and lote-bush. Note the mistletoe on the mesquites in the foreground.



A typical flood-bottom. Under these tall pecans, hackberries, cottonwoods and elms grow purple clematis, Texas virgin's bower, violets, daisy fleabane, verbenas, bedstraw and other moisture-loving and shade-enduring plants.



One of the artificial lakes near San Antonio. In a few such localities, one finds any number of our native aquatic plants. These lakes are controlled by local hunting clubs, and every effort is made to preserve the natural conditions.

stems: *Convolvulus*, Lat. *convolvere*, to twine around: *Evolvulus* Lat. *e*, not, *convolvere*, to twine around. Another large group have their origin in the names of places and distinguished persons. Among these are *Lindheimera*, named for Ferdinand Lindheimer, late resident of New Braunfels, and "Father of Texas Botany": *Engelmannia*, named for Dr. George Engelmann, who named a large number of Texas plants collected by Lindheimer and others: *Berlandiera*, named for Dr. Luis Berlandier, a French scientist who collected in Mexico and Texas (1826-34): *Lesquerella*, named for Lesquereux, an American botanist; and *Castilleja*, named for a Spanish botanist.

Following the genus name is the species, which is rarely, and by many modern botanists, never, capitalized. Species are similar in origin to the genus names and are adjectives modifying the Genus. Thus, *Aesculus flava* is named for the yellow petals of the Mexican Buckeye: *Aesculus purpurea* describes the purple blossoms: *Quercus alba* describes the White Oak: *Echinodorus cordifolius* derives its origin from *cordis*, heart, *folium*, leaf, from the shape of the leaves: *Berberis trifoliata*, Lat. *tri*, three, *folium*, leaf. Another group have their origin in the name of interested scientists. Note the names *Petalostemon stanfieldii*, given for S. W. Stanfield, of San Marcos: *Crataegus mackensenii*, named for the late Bernard Mackensen of San Antonio: *Quercus laceyana*, named for Howard Lacey of Kerrville, the discoverer of the Lacey Oak.

Following the species name is the name or the abbreviation of the name, of the botanist who first described and published it. For example, *Castilleja woottonii* Standl. was named by Dr. Paul C. Standley, our present Assistant Curator of the United States National Herbarium.

A further relationship of plants is expressed by placing several genera with common characteristics in a family group. These groups bear the ending *aceae*. Thus *Fabaceae* have bonnet-shaped flowers: members of the *Asteraceae* have composite flowers: and, *Euphorbiaceae* bear a three-lobed, superior ovary.

Here again many families bear descriptive names as Umbelliferae where all the flowers are in umbels, and Rosaceae where all flowers bear a strong resemblance in structure to the wild rose.

It will thus be seen that all plants are individuals, and as such are entitled to as much respect in nomenclature as do the highest organisms of the animal kingdom.

HOW TO USE THE KEY

The method of finding the name of a plant by means of a key is best illustrated by a definite example. First, turn to the key on page 17. The first choice to be made is between plants with leaves and plants without leaves.

Suppose we take the common agarita. Under plants with leaves, you will find a choice between I. *Leaves compound* (page 17) and II. *Leaves simple* (page 25). The agarita has compound leaves. Under I. *Leaves compound*, make a choice between A. *Leaves palmately compound* (page 17) and B. *Leaves pinnately compound* (page 18). Having decided on A. *Leaves palmately compound*, the investigator's next decision rests between 1. *Leaflets generally 3* (page 17) and 2. *Leaflets usually 5* (page 18). Our plant has 3 leaflets, so take choice 1. Under choice 1., choose between a. *Flowers yellow* and b. *Flowers white*. The flowers of the agarita are yellow. Under a. *Flowers yellow*, take choice x. *Shrub, leaflets 3, spine-toothed*, which will take you to *Berberis* (page 82). Now turn to page 82, where the family, genus, species, common name and description are given.

Where both the calyx and corolla are not present, call the parts given calyx, regardless of whether they are colored and corolla-like or not.

The measurement of plants in Texas does not always agree with those given in the textbook descriptions due to the variability of our seasons. In a drought year plants may be only a few inches high, while in the following season with plenty of rainfall they will have a rank growth shoulder-tall. Likewise blue and pink flowers often have albino forms. Albino forms are common in the shrubby sage, *Erythraea*, *Sabbatia*, baby blue-eyes, and violets.

KEY TO THE WILD FLOWERS OF SAN ANTONIO AND VICINITY

Page

PLANTS WITHOUT LEAVES.

- I. Stems red, orange, or yellow.....Cuscuta—166
- II. Stems thick, fleshy, covered with spines.....Opuntiaceae—142

PLANTS WITH LEAVES.

I. Leaves compound.

A. Leaves palmately compound.

- 1. Leaflets generally 3, sometimes 4 or 5.

a. Flowers yellow.

- x. Shrub, leaflets 3, spine-toothed Berberis— 82
- y. Vine, leaflets usually 4. Zornia—110
- z. Plant neither a shrub nor a vine. Oxalis—114

b. Flowers white or tinged with pink, green, blue or purple.

- x. Shrub.
 - m. Prickly shrub with trailing branches. Rubus— 90
 - n. Shrub not prickly.
 - (1) Leaflets entire. Ptelea—118
 - (2) Leaflets not entire Schmalzia—127

- y. Vine with tendrils. Cyclanthera—202

- z. Plants neither shrubs nor vines.

- m. Flowers bonnet-shaped Psoralea—104-5

- n. Flowers not bonnet-shaped.

- (1) Petals 4, stamens 6. Nasturtium— 86

- (2) Petals 5.

- r. Leaves ill-scented Polanisia— 88

- s. Leaves not ill-scented Geum—90

- c. Flowers brown or reddish-brown.

- | | Page |
|---|--------------------|
| x. Vine, flowers, bonnet-shaped | Psoralea—105 |
| d. Flowers blue to purple. | |
| x. Plants neither shrubs nor vines. | |
| m. Flowers bonnet-shaped. | |
| (1) Upper petal with white or red blotch | Lupinus—100 |
| (2) Upper petal without white or red blotch | Psoralea—104-5 |
| n. Flowers not bonnet-shaped | Oxalis—113 |
| 2. Leaflets usually 5, sometimes 6 or 7. | |
| a. Flowers yellow or greenish-yellow. | |
| x. Shrub | Aesculus—129 |
| y. Woody vine | Parthenocissus—133 |
| b. Flowers white. | |
| x. Vine climbing by tendrils | Cyclanthera—202 |
| c. Flowers pink to red. | |
| x. Shrub | Aesculus—129 |
| d. Flowers blue to purple. | |
| x. Plants neither shrubs nor vines. | |
| m. Flowers bonnet-shaped. | |
| (1) Upper petal with white or red blotch | Lupinus—100 |
| (2) Upper petal without white or red blotch | Psoralea—104-5 |
| B. Leaves pinnately compound. | |
| 1. Leaves once pinnate. | |
| a. Leaves mainly opposite. | |
| x. Leaves with odd leaflet at end. | |
| 1. Flowers yellow. | |

- | | Page |
|--|------------------|
| m. Plant neither a shrub or vine. | |
| (1) Petals 7—16..... | Ranunculus— 80 |
| 2. Flowers white. | |
| m. Shrub | Sambucus—200 |
| n. Vine | Clematis— 79 |
| o. Plants neither shrubs nor vines | Erodium—112 |
| 3. Flowers blue or purple. | |
| m. Vine | Viorna— 80 |
| y. Leaves without odd leaf-at end. | |
| 1. Flowers yellow. | |
| m. Stems prostrate. | |
| (1) Leaflets 3—4 pairs | Kalstroemia—116 |
| (2) Leaflets 10—14 pairs | Tribulus—114 |
| 2. Flowers blue or purple. | |
| m. Shrub | Porliera—117 |
| b. Leaves mainly alternate. | |
| x. Leaves with tendril at end. | |
| 1. Flowers blue or purple. | |
| (1) Leaflets 1 pair..... | Lathyrus—110 |
| (2) Leaflets 4—8 pairs | Vicia—110 |
| y. Leaves with odd leaflet at end. | |
| 1. Flowers yellow, orange or greenish-yellow. | |
| m. Shrub (Leaves are really twice-pinnate) | Parkinsonia— 98 |
| n. Vines or plants with prostrate stems ... | |
| (1) Leaflet 1..... | Dolicholus—108 |
| (2) Leaflets 3 | Dolicholus—108-9 |
| (3) Leaflets 3—9..... | Aeschynomene—111 |
| o. Plants neither shrubs nor with vine-like stems. | |

	Page
r. Flowers spurred.....	Capnoides— 83
s. Flowers not spurred.	
(a) Leaflets 1—3.	
(1) Leaflet 1.....	Dolicholus—108
(2) Leaflets 3.....	Mellilotus—101
(b) Leaflets more than 3.	
(m) Flowers in a compound umbel	Phanerotaenia—154
(n) Flowers in a spike.	
(1) Stamens 5.....	Petalostemon—107
(2) Stamens 10.....	Parosela—105
(o) Flowers neither in a spike nor an umbel	Ranunculus— 80
2. Flowers brown or reddish-brown.	
m. Vine or stems prostrate and spreading	Psoralea—105
3. Flowers white or tinted with green, pink, blue or purple.	
m. Shrubs.	
(x) Stems prickly.	
a. Leaflets 3—5.....	Rubus— 90
b. Leaflets more than 3—5.	
(1) Flowers small, clustered....	Xanthoxylum—
(2) Flowers large, 1½—2" across	Rosa— 91
(y) Stems not prickly	
a. Leaflets 3.	
(1) Leaflets entire	Ptelea—118
(2) Leaflets not entire	Rhus—127

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|--|------------------|
| b. Leaflets more than 3. | |
| r. Leaves evergreen | Schmaltzia—126 |
| s. Leaves not evergreen. | |
| (m) Leaflets small, less than $\frac{3}{4}$ " long. | |
| (1) Rachis winged | Schmaltzia—126 |
| (2) Rachis not winged | Eysenhardtia—105 |
| (n) Leaflets more than 1" long. | |
| (1) Rachis winged | Schmaltzia—126 |
| (2) Rachis not winged | Sapindus—130 |
| n. Woody vines climbing by aerial rootlets | Rhus—127 |
| o. Plants neither shrubs nor vines. | |
| r. Leaves finely dissected. | |
| (1) Flowers composite | Achillea—239 |
| (2) Flowers not composite | Ammiaceae—152 |
| s. Leaflets distinct, not finely dissected. | |
| a. Leaflets 3. | |
| (1) Flowers bonnet-shaped | Melilotus—101 |
| (2) Flowers not bonnet-shaped | Polanisia—88 |
| b. Leaflets 3—9. | |
| (1) Flowers in | |

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|---|-------------------|
| spherical heads.... | Petalostemon—106 |
| (2) Flowers not
in spherical
heads | Nasturtium— 86 |
| c. Leaflets 17—33..... | Astragalus—103 |
| 4. Flowers pink to red or
magenta. | |
| m. Shrubs. | |
| (1) Leaflets 3—7..... | Ungnadia—130 |
| (2) Leaflets 11—15..... | Sophora—100 |
| n. Vines or plants with
prostrate stems. | |
| a. Leaflets 3. | |
| (1) Flowers moroc-
co-red | Psoralea—105 |
| (2) Flowers pur-
plish | Lespedeza—108 |
| b. Leaflets more than
3. | |
| (1) Leaflets white-
margined | Cracca—102 |
| (2) Leaflets not
white-margined..... | Indigofera—101 |
| o. Plants neither shrubs
nor vines. | |
| (1) Stems square,
corolla scarlet..... | Salvia—186 |
| (2) Stems not square,
corolla not scar-
let | Parosela—106 |
| 5. Flowers blue to purple. | |
| m. Shrubs. | |
| (1) Leaflets ever-
green, leathery..... | Sophora— 99 |
| (2) Leaflets not
leathery | Amorpha—111 |
| n. Vines or stems pros-
trate. | |
| a. Leaflets 3. | |
| (1) Pod 1-seeded..... | Lespedeza—108 |
| (2) Pod more than
1-seeded | Strophostyles—109 |

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- b. Leaflets more than 3 Cracca—102
 - o. Plants neither shrubs nor vines.
 - a. Leaflet 1 Meibomia—107
 - b. Leaflets 3 Medicago—101
 - c. Leaflets more than 3.
 - (x) Leaflets finely dissected Erodium—112
 - (y) Leaflets not finely dissected.
 - r. Flowers in spikes.
 - (1) Stamens 5 Petalostemon—107-6
 - (2) Stamens 10 Parosela—105
 - s. Flowers not in spikes Astragalus—103
 - z. Leaves without odd leaflet at end.
 - 1. Flowers yellow or orange.
 - m. Shrubs.
 - (1) Branches thorny (Leaves are really 2-pinnate) Parkinsonia— 98
 - (2) Branches not thorny Daubentonia—102
 - n. Plants with prostrate stems.
 - (1) Leaflets 3—4 pairs Kalstoemia—116
 - (2) Leaflets 10—14 pairs Tribulus—114
 - o. Plants neither shrubs nor with prostrate stems.
 - r. Leaflets 1—6 pairs Cassia— 97
 - s. Leaflets more than 6 pairs
 - (1) Leaves about 1" long Chamaecrista— 98

	Page
(2) Leaves 4—16"	
long	Sesbania—102
2. Leaves twice-pinnate.	
x. Leaves with odd leaflet at end.	
1. Flowers yellow or orange or green.	
m. Thorny shrub	Parkinsonia— 98
n. Vine	Ampelopsis—133
o. Plants neither shrubs nor vines	Phanerotaenia—154
2. Flowers white or tinted with pink, blue or purple.	
m. Vine	Cardiospermum—129
n. Plants not vines.	
(1) Flowers clustered in umbels	Ammiaceae—152
(2) Flowers solitary, not clustered	Anemone— 79
3. Flowers blue to purple.	
(1) Petals many	Anemone— 79
y. Leaves without odd leaf- let.	
1. Flowers yellow.	
m. Shrub.	
(1) Flowers in spherical clusters	Vachellia—94
(2) Flowers not in spherical clusters	Parkinsonia— 98
2. Flowers white.	
m. Shrub.	
(x) Branches thorny or prickly.	
r. Prickles recurved	Acacia—92-3
s. Prickles not re- curved	
(1) Leaflets about 1" long	Prosopis— 96
(2) Leaflets less than 1" long	Acacia— 93
(y) Branches not	

	thorny	Acacia—93-4
n. Plants not shrubs but	shrubby at base.	
	(1) Pods very flat.	Acacia—93-4
	(2) Pods not flat.	Acuan—95
3. Flowers pink to red.		
m. Shrubs.		
	(1) Branches prickly	Mimosa—96
	(2) Branches not	
	prickly	Callandra—94
n. Stems vine-like or	prostrate	Morongia—95-6
II. Leaves simple.		
A. Leaves parallel-veined.		
a. Flowers white, cream-colored or	pinkish.	
m. Vine armed with spines.		Smilax—66
n. Shrubs (some only shrubby at base).		
(x) Leaves with hooked spines on	margin	Dasyllirion—66
(y) Leaves not armed with hooked	spines	
r. Leaves thick, fleshy, spine-toothed.		Agave—67
s. Leaves not fleshy or spine-toothed.		
	(1) Leaves slender, grass-like.	Nolina—65-6
	(2) Leaves not slender or grass-	
	like	Yucca—64-5
o. Plants neither vines nor shrubs.		
(x) Leaves thick, fleshy, mottled.		Manfreda—67
(y) Leaves not thick, fleshy or	mottled.	
r. Petals and sepals 3 each, alike in	color.	
(m) Leaves onion-scented.		Allium—62
(n) Leaves not onion-scented.		
	(1) Flowers solitary.	Cooperia—69
	(2) Flowers clustered.	Nothoscordium—63
s. Petals and sepals 3 each, unlike.		
	(1) Stamens 6, feathered at base.	Tradescantia—59
	(2) Stamens more than 6, not	
	feathered	Echinodorus or Sagittaria—58

	Page
(1) Branches zigzag	Colubrina—131
(2) Branches not zigzag	Adelia—159
(y) Plants with creeping stems	Isnardia—146
(z) Plants neither shrubs nor vines.	
1. Petals none. (In Paronychia sepals are petal-like).	
(1) Sap milky	Poinsettia—125
(2) Sap not milky	Paronychia—72
2. Petals or lobes of corolla 4.	
r. Leaves in whorls of 4 or 7	Gallum—199
s. Leaves not in whorls.	
(m) Leaves small, fleshy	Sedum—89
(n) Leaves neither small nor fleshy.	
(1) Flowers in flat-topped clusters	Lantana—180
(2) Flowers solitary and axillary	Mercardonia—192
3. Petals or lobes of corolla 5, sometimes 6.	
r. Sap milky	Asclepias—162-3
s. Sap not milky.	
(m) Petals distinct or nearly so.	
(x) Leaves fleshy	Sedum—89
(y) Leaves not fleshy	
(1) Buds red, stamens 2	Menodora—158
(2) Stamens 5	Linum—112-3
(3) Stamens 10	Thryallis—117
(n) Petals united at base.	
(x) Flowers clustered	Lantana—180
(y) Flowers not clustered.	
(a) Corolla saucer-shaped.	
(1) Pods inflated like a bladder	Physalis—170
(2) Pods not inflated	Chamaesaracha—170
(b) Corolla not saucer-shaped	Mercardonia—192
b. Flowers green.	
m. Sap milky.	

	Page
r. Leaves in a whorl at tip of stem.....	Poinsettia—125
s. Leaves not whorled.	
(1) Fruit small, 3-lobed.....	Chamaesyce—124
(2) Fruit 1—3" long, not lobed,....	Asclepiodora—163
c. Flowers white or grading into pink, blue or purple.	
m. Shrubs.	
r. Leaves 1" or less long.	
(1) Leaves aromatic.....	Aloysia—179
(2) Leaves not aromatic.....	Prunus— 92
s. Leaves over 1" long.	
(a) Branches spiny.....	Bumelia—158
(b) Branches not spiny.	
(x) Flowers in flat-topped clusters.	
(1) Petals 4, stamens 4.....	Cornus—151
(2) Corolla 5-lobed, stamens 5.....	Viburnum—200
(y) Flowers not in flat-top- ped clusters.	
(m) Flowers in spherical heads about 1" across.....	Cephalanthus—198
(n) Flowers not in spherical heads.	
(1) Terminal pair of leaves united at base.....	Lonicera—201
(2) Terminal pair of leaves not united.....	Buddleia—160
n. Vines or plants with creeping or prostrate stems.	
r. Leaves in whorls of 4 or 7.....	Galium—199
s. Leaves not whorled.	
(a) Flowers tubular 4—6" long,....	Acleisanthes— 75
(b) Flowers not tubular.	
(m) Flowers in compact heads.....	Lippia—179
(n) Flowers not in compact heads.	
(1) Corolla 4-lobed.....	Isnardia—146
(2) Corolla 5-lobed.....	Monniera—192
o. Plants neither shrubs nor vine- like.	
m. Flowers composite—See key to	

	Page
Asteraceae	Asteraceae—205
n. Flowers simple.	
r. Stems square.	
(a) Leaves in whorls of 4 or 7	Galium—199
(b) Leaves not in whorls of 4 or 7	
(1) Petals distinct or nearly so	Houstonia—198
(2) Petals united in a tube—See key to Menthaceae	Menthaceae—180
s. Stems not square.	
(x) Petals or lobes of corolla 4 or none.	
(a) Leaves united at base by a fringe of hairs	Crusea—198
(b) Leaves not united as in (a).	
(r) Spikes cottony	Froelichia— 72
(s) Flowers not in spikes.	
(1) Stamens 2.	
(m) Flowers solitary in each of upper leaf-axils	Veronica—192
(n) Flowers not solitary	Dianthera—195
(2) Stamens 4	Polypremum—160
(y) Petals or lobes of corolla 5 or more.	
(a) Sap milky	Asclepiadaceae—162
(b) Sap not milky	
(r) Petals distinct or nearly so.	
(1) Stems with sticky patches	Silene— 78
(2) Stems not sticky.	
(m) Petals deeply notched	Alsinaceae— 77
(n) Petals not deeply notched	Nemophila—166
(s) Petals united at base.	

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- (1) Flower spike coiled
at the tips *Cynoctonum*—159
 - (2) Flower spike not
coiled at the tips.
 - (m) Corolla tubular,
over $\frac{1}{2}$ " long. *Pentstemon*—191
 - (n) Corolla not tubu-
lar, flowers in
flat-topped clus-
ters *Valerianella*—201
 - d. Flowers pink, rose, red or reddish-
brown.
 - m. Shrubs.
 - (1) Leaves linear, less than 1"
long *Castela*—118
 - (2) Leaves broad, over 2" long. *Callicarpa*—180
 - n. Vines or plants with prostrate
stems.
 - (x) Flowers clustered.
 - (1) Flowers large, scarlet. *Nyctaginia*—75
 - (2) Flowers small, wine red. *Boerhaavia*—75
 - (y) Flowers not clustered. *Anagallis*—157
 - o. Plants neither shrubs nor vines.
 - (x) Stems square.
 - (1) Petals distinct or nearly so *Erythraea*—160-1
 - (2) Petals united in a tube—See
key to *Menthaceae* *Menthaceae*—180
 - (y) Stems not square.
 - r. Flowers composite—See key
to *Asteraceae* *Asteraceae*—205
 - s. Flowers simple.
 - (m) Petals distinct or nearly
so.
 - (1) Leaves fleshy, less than
1" long *Portulaca*—76
 - (2) Leaves not fleshy.
 - (m) Stems with sticky
patches *Silene*—78
 - (n) Stems not sticky.
 - (n) Petals or petal-like parts. *Thryallis*—117
united at base.
 - (r) Flowers 2-lipped.

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- (1) Lower lip much broader than upper....Siphonoglossa—195
 - (2) Lower and upper lip about equalPentstemon—191
 - (s) Flowers not 2-lipped.
 - (1) Corolla-like calyx funnel-formMirabilis— 73
 - (2) Corolla-like calyx saucer-shapedAllionia— 74
 - (3) Corolla wheel-shaped.....Phlox—168
 - e. Flowers blue to purple.
 - m. ShrubsCallicarpa—180
 - n. Plants with creeping stems.....Monniera—192
 - o. Plants neither shrubs nor vines.
 - (x) Stems square.
 - r. Flowers in flat-topped clustersVerbena—177-8
 - s. Flowers not in flat-topped clusters.
 - (1) Corolla trumpet-shaped over 1" long.....Ruellia—194
 - (2) Corolla not trumpet shaped.
 - (m) Corolla with raised purple dots within.....Calophanes—193
 - (n) Corolla wheel-shaped, 5-lobedVerbena—178
 - (o) Corolla tubular, 2-lipped —See Key to MenthaceaeMenthaceae—180
 - (y) Stems not square.
 - (a) Petals distinct.
 - (1) Fruit with a long beak.Erodium—112
 - (2) Fruit without a beak.....Nemophila—166
 - (b) Petals united at least at base.
 - r. Corolla tubular.
 - (1) Lower lip much broader than upperSiphonoglossa—195
 - (2) Lower and upper lip about equalCalophanes—193
 - s. Flowers saucer-shaped.

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(1) Leaves entire or nearly so	Allionia— 74
(2) Leaves deeply lobed	Gilia—169
y. Leaves with more than 1 vein at base.	
a. Flowers yellow or orange or green.	
x. Flowers composite—See Key to Asteraceae	Asteraceae—205
y. Flowers simple.	
m. Shrubs.	
(1) Plants parasitic on trees	Phoradendron—197
(2) Plants not parasitic	Colubrina—131
n. Vines	Vincetoxicum—164
o. Plants neither shrubs nor vines.	
(1) Flowers conspicuous, showy	Lantana—180
(2) Flowers not conspicuous.	
(m) Leaves entire	Croton—120-1
(n) Leaves toothed	Xanthium—213
b. Flowers white or grading into pink, green, purple or blue.	
m. Shrubs.	
(1) Leaves less than 1" long	Philadelphus— 90
(2) Leaves over 1" long.	
(m) Leaves entire	Cornus—151
(1) Terminal pair of leaves united at base	Lonicera—201
(2) Terminal pair of leaves not united	Cornus—151
(n) Leaves toothed	Eupatorium—214
n. Vines or stems prostrate.	
(x) Sap milky	Philabertella—164
(y) Sap not milky.	
r. Flowers composite	Mikania—215
s. Flowers simple.	
(m) Leaves broader than long	Bowlesia—153
(n) Leaves not broader than long.	
(1) Flowers tubular, 4—6" long	Acleisanthes— 75
(2) Flowers not tubular.	
(a) Flowers in heads	Lippia—179
(b) Flowers not in heads	Isnardia—146
o. Plants not shrubs or vines.	

	Page
(x) Flowers composite—See Key	
Asteraceae	Asteraceae—205
(y) Flowers simple.	
r. Stems square.	
(1) Stems white-woolly	Marrubium—183
(2) Stems not white-woolly.	
(m) Leaves with stinging	
hairs	Urtica—70
(n) Leaves without sting-	
ing hairs	Verbena—177-8
s. Stems not square.	
(1) Flowers in spikes or close	
racemes.	
(m) Leaves heavily ribbed,	
all basal	Plantago—196
(n) Leaves not heavily	
ribbed	Cynoctonum—159
(2) Flowers in flat-topped	
clusters	Valerianella—201
(3) Flowers not in spikes or	
flat-topped clusters.	
(a) Petals distinct.	
(1) Fruit with long beak	Geranium—111
(2) Fruit not beaked	Silene—78
(b) Petals united.	
(m) One stamen bearded	Pentstemon—191
(n) None of the stamens	
bearded	Martynia—195
c. Flowers pink to red.	
m. Vines or stems prostrate	Vincetoxicum—164
n. Plants not vine-like.	
r. Stems square.	
(x) Corolla tubular, strongly 2-	
lipped—See Key to Men-	
thaceae	Menthaceae—180
(y) Corolla not tubular and 2-	
lipped.	
(1) Corolla with yellow center	Sabbatia—161
(2) Corolla with purple center	Anagallis—157
(3) Corolla without yellow or	
purple center.	
(m) Stamens conspicuous	Erythraea—160-1

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- (n) Stamens not conspicuous *Verbena*—177-8
 - s. Stems not square.
 - (x) Petals distinct.
 - (1) Fruit with a long beak..... *Erodium*—112
 - (2) Fruit without a beak..... *Silene*— 78
 - (y) Petal-like sepals united at base.
 - (m) Flowers trumpet-shaped or tubular, $\frac{1}{2}$ " or more long
 - (1) Flowers scarlet..... *Nyctaginia*— 75
 - (2) Flowers deep pink..... *Mirabilis*— 73
 - (3) Flowers neither scarlet nor deep pink..... *Martynia*—195
 - (n) Flowers small, not tubular, wine-red *Boerhaavia*— 75
 - d. Flowers blue to purple.
 - m. Shrubs *Salvia*—187
 - n. Vines or stems prostrate..... *Vincetoxicum*—164
 - o. Plants neither shrubs nor vines.
 - (x) Stems square.
 - (1) Corolla tubular, strongly 2-lipped—See Key to *Menthaceae* *Menthaceae*—180
 - (2) Corolla not strongly 2-lipped *Verbena*—177-8
 - (y) Stems not square.
 - r. Petals distinct..... *Erodium*—112
 - s. Petals united at least at base.
 - (m) Corolla saucer-shaped..... *Gilia*—169
 - (n) Corolla bell-shaped or tubular.
 - (1) Corolla blue, lobes equal *Eustoma*—161
 - (2) Corolla pale, somewhat 2-lipped.
 - (a) One stamen bearded..... *Pentstemon*—191
 - (b) None of the stamens bearded *Martynia*—195.
 - (II) Leaves mainly alternate.
 - x. Leaves with one main vein at base.
 - a. Flowers yellow or orange.

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- m. Flowers composite—See Key to
Asteraceae Asteraceae—205
- n. Flowers simple.
- (x) Shrubs.
- r. Branches thorny.
- (1) Leaves pale green Condalia—132
- (2) Leaves not pale green Zizyphus—131
- s. Branches not thorny.
- (1) Branches zigzag Colubrina—131
- (2) Branches not zigzag Croton—120
- (y) Vines or stems creeping or
prostrate.
- r. Sap milky Asclepiodora—163
- s. Sap not milky Jussiaea—146
- (z) Plants neither shrubs nor
vines.
1. Petals 3 or none (Tillandsia
has 3 petals).
- m. Sap milky.
- a. Leaves crowded in a
rosette at tip of stem Poinsettia—125
- b. Leaves not crowded in a
rosette.
- r. Flowers in a terminal
spike Stillingia—123
- s. Flowers not in a spike.
- (1) Flowers few in a
cup formed by 2
bracts Tithymalus—125
- (2) Flowers not in cups
formed by bracts Chamaesyce—124
- n. Sap not milky.
- a. Aerial, silvery-grey plant Tillandsia—61
- b. Plants not aerial.
- r. Pods bristly-hairy Tragia—122
- s. Pods not bristly-hairy.
- (1) Pods 3-lobed Croton—120-1
- (2) Pods not 3-lobed Phyllanthus—120
2. Petals or lobes of corolla
usually 4.
- r. Stamens 6.
- (m) Flowers spurred Capnoides—83

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- (n) Flowers not spurred.
 - (a) Pods globose.....Lesquerella—85-6
 - (b) Pods not globose.
 - (1) Pods about $\frac{1}{2}$ " longSophia— 88
 - (2) Pods more than $\frac{1}{2}$ " long
 - o. Petals orange-yellowCheirinia— 86
 - p. Petals mustard-yellowBrassica— 87
 - s. Stamens 8 (10 in Sedum).
 - (m) Leaves strong-scented, gland-dottedThamnosma—117
 - (n) Leaves not strong-scented.
 - (a) Leaves small, fleshy.....Sedum— 89
 - (b) Leaves not fleshy.
 - o. Stigma 4-lobed.
 - (x) Plants stemless.....Lavauxia—147
 - (y) Plants not stemless.
 - (1) Leaves variously lobedOenothera—147
 - (2) Leaves narrow, thick, entire.....Megapterium—148
 - (3) Leaves lanceolate, thinJussiaea—146
 - p. Stigma rounded like a disk.
 - (1) Leaves linear, $\frac{1}{2}$ —1" longGalpinsia—149
 - (2) Leaves more than $\frac{1}{2}$ —1" longMeriolix—148
 - 3. Petals or lobes of corolla usually 5.
 - (m) Petals distinct or nearly so.
 - (a) Leaves small, fleshy.....Sedum— 89
 - (b) Leaves not fleshy.
 - o. Buds red, stamens 2.....Menodora—158
 - p. Stamens 5.

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|---|----------------------|
| (1) Leaves very large,
thick like flannel..... | Verbascum—190 |
| (2) Leaves thin. | |
| r. Pods inflated like
a bladder | Physalis—170 |
| s. Pods not inflated..... | Linum—112-3 |
| q. Stamens more than 5. | |
| (x) Stamens united at
base | Sida, Malvastrum—135 |
| (y) Stamens distinct. | |
| (1) Leaves fleshy..... | Talinum— 76 |
| (2) Leaves not fleshy... | Helianthemum—139 |
| (n) Petals united fully half
their length. | |
| (a) Stems prickly..... | Solanum—172 |
| (b) Stems not prickly. | |
| (1) Corolla tubular..... | Lithospermum—176 |
| (2) Corolla saucer-shaped. | |
| o. Pods inflated like a
bladder | Physalis—170 |
| p. Pods not inflated..... | Chamaesaracha—170 |
| 4. Petals or lobes of corolla more
than 5. | |
| (1) Petals 10, leaves rough..... | Mentzelia—141 |
| (2) Petals 7—16, leaves not
rough | Ranunculus— 80 |
| b. Flowers green or greenish. | |
| (x) Shrubs. | |
| r. Branches thorny..... | Zizyphus—131 |
| s. Branches not thorny. | |
| (1) Branches zigzag..... | Colubrina—131 |
| (2) Branches not zigzag..... | Croton—120 |
| (y) Vine with few stinging hairs..... | Tragia—122 |
| (z) Plants not shrubs or vines. | |
| r. Sap milky. | |
| 1. Upper leaves white-margined.... | Dicrophyllum—124 |
| 2. Leaves not white-margined. | |
| (a) Leaves whorled at tips of
stem | Poinsettia—125 |
| (b) Leaves not whorled. | |
| (1) Flowers in spikes. | Stillingia—123 |
| (2) Flowers in big rounded | |

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- clusters *Asclepiodora*—163
- (3) Flowers few in a cup
formed by 2 bracts *Tithymalus*—125
- s. Sap not milky.
1. Pods bristly *Tragia*—122
2. Pods not bristly.
- (a) Leaves covered with
branched hairs *Croton*—120-1
- (b) Leaves smooth.
1. Leaves less than 1" long.
- o. Petals none *Phyllanthus*—120
- p. Petals 5—6 *Andrachne*—119
2. Leaves over 1" long,
flowers not axillary *Rumex*— 71
- c. Flowers pink, rose or red.
- m. Flowers composite—See Key to
Asteraceae Asteraceae—205
- n. Flowers simple.
- (x) Shrub *Castela*—118
- (y) Vine or stems prostrate *Krameria*— 98
- (z) Plants neither shrubs nor
vines.
- a. Petals none.
1. Pistil with branched, red
styles *Acalypha*—121-2
2. Styles not branched or red.
- (m) Stems sheathed at
joints *Persicaria*— 71
- (n) Stems not sheathed at
joints *Rivina*— 72
- b. Petals 4.
- m. Petals distinct or nearly
so (Sepals in *Rivina* and
Persicaria are pink. Find
under petals none).
1. Leaves small, fleshy *Portulaca*— 76
2. Leaves not fleshy.
- (m) Stamens 8 *Gaura*—150-1
- (n) Stamens numerous,
plants prickly *Argemone*— 83
- c. Petals or lobes of corolla 5 or
more.

- Page
- r. Petals distinct or nearly so.
 - 1. Leaves small, fleshy.....Portulaca— 76
 - 2. Leaves not fleshy.
 - (a) Plant thistle-like.....Argemone— 83
 - (b) Plant not thistle-like.
 - (1) Petals dull-scarlet.....Hermannia—138
 - (2) Petals pink to salmonSpharalcea—137
 - s. Petals united.
 - 1. Sap milky, corolla scarlet.....Lobelia—204
 - 2. Sap not milky.
 - (m) Leaves entirePhlox—168
 - (n) Leaves finely divided.....Gilia—169
 - d. Flowers mainly white.
 - m. Flowers composite—See Key to AsteraceaeAsteraceae—205
 - n. Flowers simple.
 - (x) Shrubs.
 - 1. Branches thorny.
 - (a) Petals distinct.
 - (1) Fruit a plum.....Prunus— 92
 - (2) Fruit a small apple.....Crataegus— 91
 - (b) Petals united at base.....Bumelia—158
 - 2. Branches not thorny.
 - (a) Petals distinct or nearly so.
 - 1. Stamens numerous.....Prunus— 92
 - 2. Stamens not numerous.
 - (m) Leaves 2—5" long.....Rhamnus—131
 - (n) Leaves 1—2½" long.....Ilex—128
 - (b) Petals unitedBrayodendron—158
 - (y) Vines or stems prostrate.
 - 1. Corolla wheel-shaped.....Chamaesaracha—170
 - (z) Plants neither shrubs nor vines.
 - 1. Petals or lobes of corolla 3 or none (Polygala has 2 white petal-like sepals, in addition to 3 petals).
 - a. Sap milkyEuphorbia—124-6
 - b. Sap not milky.

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- r. Leaves linear, less than 1" long *Polygala*—118
 - s. Leaves over 1" long.
 - 1. Stems sheathed at the joints *Persicaria*— 71
 - 2. Stems not sheathed at the joints.
 - (1) Leaves green, fruit a juicy berry *Phytolacca*— 73
 - (2) Leaves paler, fruit not juicy *Eriogonum*— 70
 - 2. Petals or lobes of corolla usually 4.
 - r. Stamens 6.
 - 1. Pods less than $\frac{1}{2}$ " long.
 - (1) Pods scale-like, pery *Lepidium*— 84
 - (2) Pods triangular *Bursa*— 84
 - (3) Pods oblong *Draba*— 87
 - 2. Pods over 1" long *Arabis*— 88
 - s. Stamens 8.
 - (1) Flowers in a leafless spike or raceme *Gaura*—150-1
 - (2) Flowers not in a leafless spike or raceme *Hartmannia*—149
 - 3. Petals or lobes of corolla usually 5.
 - r. Sap milky.
 - (1) Leaves leathery *Acerates*—163
 - (2) Leaves not leathery *Asclepias*—162
 - s. Sap not milky.
 - (m) Petals distinct or nearly so.
 - 1. Plant thistle-like, sap orange-colored *Argemone*— 82
 - 2. Plants not thistle-like.
 - (a) Leaves entire or nearly so.
 - (r) Leaves narrow.
 - (1) Petals all alike *Lappula*—175
 - (2) Petals not alike *Calceolaria*—140

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- (s) Leaves broad.
 - (1) Blades stalked *Solanum*—171
 - (2) Blades sessile.
 - (1) Flowers solitary *Marilaunidium*—167
 - (2) Flowers not solitary *Samolus*—156-7
 - (b) Leaves not entire.
 - (1) Fruit with a long beak *Erodium*—112
 - (2) Fruit not beaked *Nemophila*—166
 - (n) Petals united.
 - (a) Corolla tubular, over $\frac{3}{4}$ " long.
 - (1) Foliage bristly-hairy *Onosmodium*—176
 - (2) Foliage not bristly-hairy.
 - o. Corolla $1\frac{1}{2}$ — $2\frac{1}{2}$ " long *Nicotiana*—173
 - p. Corolla 6—7" long *Datura*—174
 - (b) Corolla tube less than $\frac{3}{4}$ " long.
 - 1. Leaves mostly broadest above the middle.
 - (1) Flowers solitary *Marilaunidium*—167
 - (2) Flowers not solitary *Samolus*—156-7
 - 2. Leaves not broadest above the middle.
 - (r) Corolla saucer-shaped, 5-angled.. *Chamaesaracha*—170
 - (s) Corolla trumpet-shaped or flaring bell-shaped.
 - (1) Corolla about $\frac{1}{2}$ " across *Bouchetia*—174
 - (2) Corolla $\frac{1}{4}$ " or less across.
 - 1. Flowers in strongly coiled

	Page
racemes.	
a. Calyx bristly.....	Cryptanthe—175
b. Calyx not bristly	Heliotropium—177
2. Flowers not in strongly coiled racemes.	
a. Corolla lobed.	
(1) Fruit prickly	Lappula—175
(2) Fruit not prickly	Heliotropium—177
b. Corolla not lobed	Evolvulus—165
e. Flowers blue, violet or purple.	
m. Flowers composite—See Key to Asteraceae	Krameria— 98
n. Flowers simple.	
(x) Stems creeping or prostrate.	
(1) Flowers reddish-purple, irregular	Petunia—173
(2) Flowers blue to violet, regular	Polygala—119
(y) Stems not prostrate.	
(a) Flowers bonnet-shaped or nearly so.	
(1) Leaves $\frac{1}{8}$ — $\frac{1}{2}$ " long.....	Meibomia—107
(2) Leaves over $\frac{3}{4}$ " long (Leaf is really compound)	
(b) Flowers not bonnet-shaped.	
1. Petals or lobes of corolla 3.	
(1) Silver-grey plants growing in small bunches or trees	Tillandsia— 61
2. Petals or lobes of corolla 4.	
(1) Stamens 6, pods flat.....	Arabis— 88
(2) Stamens 8, fruits not flat	Hartmannia—150
3. Petals or lobes of corolla 5 or 6.	

- (m) Petals distinct or nearly so.
 - r. Leaves entire-margined.
 - (1) Leaves $\frac{1}{4}$ — $\frac{1}{2}$ " long Petunia—173
 - (2) Leaves over $\frac{1}{2}$ " long
 - o. Fruit prickly-margined Lappula—175
 - p. Fruit not prickly-margined.
 - (1) Fruit oblong, prismatic Specularia—203-4
 - (2) Fruit oblong, not prismatic. Lythrum—142
 - s. Leaves not entire-margined.
 - (1) Blades evenly toothed.
 - (a) Fruit conspicuously 5-winged. Melochia—138
 - (2) Blades lobed and variously toothed.
 - (a) Fruit with long beak Erodium—112
 - (b) Fruit not beaked.
 - o. Flowers $\frac{1}{2}$ —1" across Nemophila—166
 - p. Flowers smaller than (o) Gilia—169
- (n) Petals united.
 - r. Flower spurred. Linaria—190
 - s. Flower not spurred.
 - (1) Corolla tubular, over $1\frac{1}{2}$ " long.
 - o. Corolla 6—7" long. Datura—174
 - p. Corolla less than $1\frac{1}{2}$ " long.
 - (1) One stamen bearded Pentstemon—191
 - (2) None of the

- | | |
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|--|------|
- stamens beard-
ed Amsonia—162
- (2) Corolla saucer-
shaped or bell-
shaped.
- o. Stems prickly Solanum—172
- p. Stems not prickly.
- (a) Leaves entire
or nearly so.
1. Leaves $\frac{1}{4}$ —
 $\frac{1}{2}$ " long Petunia—173
2. Leaves longer
than $\frac{1}{2}$ ".
- a. Fruit pris-
matic Specularia—203-4
- b. Fruit not
prismatic.
- (1) Fruit
prickly Lappula—175
- (2) Fruit not
prickly Marilaundium—167
- (b) Leaves toothed
or dissected.
1. Corolla with
yellow center Gilia—169
2. Corolla without
yellow center.
- o. Leaves broad-
er than long Specularia—203
- p. Leaves not
broader than
long Phacelia—167
- y. Leaves with more than 1 vein at base.
- a. Flowers yellow or orange or green.
- m. Flowers composite—See Key to
Asteraceae Asteraceae—205
- n. Flowers simple.
- (x) Shrubs.
- r. Branches thorny Zizyphus—131
- s. Branches not thorny
- (1) Branches with tendrils Vitis—132

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- (2) Branches without tendrils.
 - o. Branches zigzag.....Colubrina—131
 - p. Branches not zigzag.....Croton—120
 - (y) Vines or plants with prostrate stems.
 - (a) Stems woody.
 - (1) Leaves fleshy, ill-smelling.....Cissus—133
 - (2) Leaves not fleshy.....Vitis—132
 - (b) Stems not woody.
 - (1) Leaves 3—10" long, ill-scentedCurcubita—202
 - (2) Leaves less than 3" long.
 - 1. Leaves broader than long.
 - (m) Vine with tendrils.....Passiflora—141
 - (n) Stems prostrate, tendrils none.
 - (1) Flowers bonnet-shapedDolicholus—108
 - (2) Flowers not bonnet-shapedBowlesia—153
 - 2. Leaves not veiny, or broader than long.
 - o. Leaves with stinging hairsTragia—122
 - p. Leaves smooth.....Ibervillea—201
 - (z) Plants neither shrubs nor vines.
 - 1. Petals none.
 - o. Stems channeled, leaves greenDitaxis—121
 - p. Stems rusty, not channeled.....Croton—120-1
 - 2. Petals or lobes of corolla 4 or 5.
 - o. Upper leaves and bracts tipped with orange.....Castilleja—192
 - p. Upper leaves not colored.
 - (1) Stamens 2, buds red.....Menodora—158
 - (2) Stamens 5Linum—112-3
 - (3) Stamens numerous.
 - o. Flowers 1" or more acrossWissadula—134

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| p. Flowers $\frac{1}{2}$ — $\frac{3}{4}$ " across..... | Abutilon—134 |
| 3. Petals numerous. | |
| (1) Plants with large float-
ing leaves | Nymphaea— 82 |
| b. Flowers pink, rose or red. | |
| m. Flowers composite—See Key to
Asteraceae | |
| n. Flowers simple. | |
| (x) Shrubs | Cercis— 96 |
| (y) Vines | Ipomoea—164-5 |
| (z) Plants neither shrubs nor
vines. | |
| (a) Petals none. | |
| (1) Pistil with branched red
styles | Acalypha—121 |
| (b) Petals or lobes of corolla 4
or 5. | |
| r. Petals distinct or nearly so. | |
| 1. Fruit with a long beak. | Erodium—112 |
| 2. Fruit not beaked. | |
| (m) Flowers pink or rose. | |
| (1) Leaves ovate or
broader | Pavonia—137 |
| (2) Leaves narrower
than (1) | Spharalcea—137 |
| (n) Flowers red. | |
| (1) Petals wine-colored..... | Callirhoe—135 |
| (2) Petals scarlet. | |
| o. Pods feathered on
the angles | Hermannia—138 |
| p. Fruit smooth, scar-
let | Malvaviscus—137 |
| s. Petals united. | |
| (1) Sap milky | Lobelia—204 |
| (2) Sap not milky..... | Castilleja—193 |
| c. Flowers white. | |
| m. Flowers composite—See Key to
Asteraceae | Asteraceae—205 |
| n. Flowers simple. | |
| (x) Shrubs. | |
| a. Branches thorny | Crataegus— 91 |
| b. Branches not thorny. | |

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|---|-------------------|
| (1) Flowers solitary..... | Philadelphus— 90 |
| (2) Flowers clustered..... | Ceanothus—130 |
| (y) Vines. | |
| a. Sap milky | Philabertella—164 |
| b. Sap not milky. | |
| r. Flowers fringed | Passiflora—140 |
| s. Flowers not fringed. | |
| (1) Flowers large, trumpet-shaped. | |
| o. Corolla white with red center | Convolvulus—165 |
| p. Corolla without red center | Ipomoea—165 |
| (2) Flowers small. | |
| o. Stems with tendrils..... | Cyclanthera—202 |
| p. Stems without tendrils..... | Cebatha— 81 |
| (z) Plants neither shrubs nor vines. | |
| a. Flowers spurred. | |
| (1) Plants 8—24" tall..... | Delphinium— 79 |
| (2) Plants stemless..... | Viola—140 |
| b. Flowers not spurred. | |
| 1. Petals distinct or nearly so. | |
| r. Petals or lobes of corolla | |
| 4. | |
| (1) Leaves all basal, heavily ribbed | Plantago—196 |
| (2) Leaves not all basal..... | Draba—87-8 |
| s. Petals or lobes of corolla | |
| 5. | |
| (m) Leaf-stalk united to blade in center..... | Hydrocotyle—152 |
| (n) Leaves not as in (m). | |
| (1) Stamens 5..... | Solanum—171 |
| (2) Stamens 10 | Geranium—111 |
| (3) Stamens numerous. | |
| o. Fruit with hooked bristles | Geum— 90 |
| p. Fruit smooth..... | Malva—134 |
| t. Petals more than 5. | |
| 1. Flowers $\frac{1}{2}$ —1" across, | |

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plants terrestrial	Anemone— 79
2. Flowers 2—3" across,	
plants aquatic	Castalia— 81
2. Petals united.	
r. Leaves armed with sting-	
ing hairs	Jatropha—123
s. Leaves not with stinging	
hairs.	
1. Leaf-stalks united to	
blade in the center.	Hydrocotyle—152
2. Leaf-stalks not united	
as in 1.	
(m) Flowers tubular.	
(1) Flowers in coiled	
racemes	Onosmodium—176
(2) Flowers not in	
coiled racemes.	Martynia—195
(n) Flowers not tubular.	Marilaunidium—167
d. Flowers blue to purple.	
m. Flowers composite—See Key to	
Asteraceae	Asteraceae—205
n. Flowers simple.	
(x) Vines or stems prostrate.	
(a) Sap milky	Vincetoxicum—164
(b) Sap not milky.	
1. Flowers fringed	Passiflora—140
2. Flowers not fringed.	
(1) Flowers trumpet-shaped.	Ipomoea—164-5
(2) Flowers tubular, 2-	
lipped	Antirrhinum—191
(y) Plants neither vines nor	
shrubs.	
r. Flowers spurred.	
(1) Plants 10—24" tall.	Delphinium— 78
(2) Plants stemless	Viola—139
s. Flowers not spurred.	
1. Plants thistle-like.	Eryngium—153
2. Plants not thistle-like.	
a. Flowers tubular	Martynia—195
b. Flowers not tubular.	
(m) Flowers with yellow	

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center	Gilia—169
(n) Flowers without yellow centers.	
(1) Fruit with a beak	Erodium—112
(2) Fruit not beaked.	
o. Fruit 5-winged	Melochia—138
p. Fruit 3-angled	Specularia—203

SHRUBS

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I. Leaves compound.	
A. Leaves palmately compound.	
1. Leaflets generally 3.	
a. Leaflets spine-toothed.....	Berberis— 82
b. Leaflets not spine-toothed.	
(1) Leaflets entire	Ptelea—118
(2) Leaflets not entire.....	Schmaltzia—127
2. Leaflets generally 5.	
(1) Leaves opposite	Aesculus—129
B. Leaves pinnately compound.	
1. Leaves once-pinnate.	
a. Leaves mainly opposite.	
(1) Leaflets small, evergreen.....	Porliera—117
(2) Leaflets large	Sambucus—200
b. Leaves mainly alternate.	
x. Leaves without odd leaflet at end.	
(1) Branches thorny (Leaves are 2- pinnate, but appear 1-pinnate).....	Parkinsonia— 98
(2) Branches not thorny.....	Daubentonia—102
y. Leaves with odd leaflet at end.	
m. Branches prickly.	
a. Leaflets 3—5...	Rubus— 90
b. Leaflets 5—11.	
(1) Leaves aromatic	Xanthoxylum—
(2) Leaves not aromatic.....	Rosa— 91
c. Leaflets numerous.	
(1) Leaves on a flattened axis (Leaves really 2-pinnate).....	Parkinsonia— 98
n. Branches not prickly.	
a. Leaflets 3.	
(1) Leaflets entire.....	Ptelea—118
(2) Leaflets not entire.....	Schmaltzia—127
b. Leaflets 3—7.....	Ungnadia—130
c. Leaflets more than 3—7.	
r. Leaflets leathery, evergreen.....	Sophora— 99
s. Leaflets not leathery.	
(m) Leaflets unequal-sided.	
(1) Rachis winged.....	Schmaltzia—126
(2) Rachis not winged.....	Sapindus—130
(n) Leaflets not unequal-sided.	
(a) Rachis winged	Schmaltzia—126

(b) Rachis not winged.	Page
(1) Flowers in hanging clusters	Sophora—100
(2) Flowers in erect spikes.	
o. Flowers white	Eysenhardtia—105
p. Flowers purple	Amorpha—111
2. Leaves twice-pinnate.	
m. Branches prickly or thorny.	
r. Leaflets on a flattened axis.	Parkinsonia— 98
s. Leaflets not on a flattened axis.	
(a) Prickles recurved.	
o. Flowers pink	Mimosa— 96
p. Flowers white.	Acacia—92-3
(b) Prickles or thorns straight.	
(1) Flowers in spherical heads.	
o. Flowers yellow	Vachellia— 94
p. Flowers white	Acacia— 93
(2) Flowers in oblong clusters.	
o. Leaflets about 1" long.	Prosopis— 96
p. Leaflets less than 1" long.	Acacia— 93
n. Branches not prickly.	
1. Flowers white	Acacia—93-4
2. Flowers reddish	Calliandra— 94
II. Leaves simple.	
A. Leaves parallel-veined.	
a. Leaves with hooked spines on margin.	Dasyllirion— 66
b. Leaves not armed with hooked spines.	
r. Leaves fleshy, thick, spine-toothed.	Agave— 67
s. Leaves neither fleshy nor spine-toothed.	
(1) Leaves slender, grass-like.	Nolina—65-6
(2) Leaves not slender or grass-like.	Yucca—64-5
B. Leaves with netted veins.	
(I) Leaves mainly opposite.	
x. Leaves with 1 main vein at base.	
a. Branches thorny.	
(1) Leaves linear	Castela—118
(2) Leaves broader than linear.	Bumelia—158
b. Branches not thorny.	
m. Branches zigzag	Colubrina—131
n. Branches not zigzag.	
r. Leaves less than 1" long.	
(1) Leaves aromatic	Aloysia—179

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| (2) Leaves not aromatic..... | Prunus— 92 |
| s. Leaves over 1" long. | |
| (x) Flowers purplish or pinkish..... | Callicarpa—180 |
| (y) Flowers white. | |
| (1) Flowers in flat-topped clusters. | |
| o. Corolla 4-lobed..... | Cornus—151 |
| p. Corolla 5-lobed..... | Viburnum—200 |
| (2) Flowers in globular clusters. | |
| o. Plant 1—2' high, rooted in crevices of limestone rocks..... | Buddleia—160 |
| p. Plant 2—12' high, leaves mostly in whorls of 3..... | Cephalanthus—198 |
| y. Leaves with more than 1 main vein at base. | |
| m. Branches zigzag..... | Colubrina—131 |
| n. Branches not zigzag. | |
| (1) Leaves about 1" long. | |
| o. Leaves thick, plants parasitic on trees..... | Phoradendron—197 |
| p. Leaves thin. | |
| 1. Stems square, leaves toothed..... | Salvia—187 |
| 2. Stems not square, leaves entire..... | Philadelphus— 90 |
| (2) Leaves over 1" long. | |
| o. Blades triangular..... | Eupatorium—214 |
| p. Blades not triangular..... | Cornus—151 |
| (II) Leaves mainly alternate. | |
| x. Leaves with 1 main vein at base. | |
| m. Branches thorny. | |
| 1. Leaves linear, white underneath..... | Castela—118 |
| 2. Leaves broader than linear. | |
| (a) Younger branches streaked lengthwise..... | Zizyphus—131 |
| (b) Younger branches not streaked lengthwise. | |
| (1) Leaf-stalk with leaf-like appendage at base..... | Crataegus— 91 |
| (2) Leaf-stalk not appendaged at base. | |
| o. Leaves woolly underneath..... | Bumelia—158 |
| p. Leaves not woolly underneath. | |

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- (1) Leaves bright green,
small *Condalia*—132
- (2) Leaves not bright green *Prunus*— 92
- n. Branches not thorny.
1. Branches zigzag.
- (1) Leaves less than $\frac{1}{2}$ " long *Prunus*— 92
- (2) Leaves over $\frac{1}{2}$ " long *Colubrina*—131
2. Branches not zigzag.
- (1) Leaves aromatic, covered with
branched hairs *Croton*—120
- (2) Leaves not as in (1).
- r. Leaf-blades 2—5" long *Rhamnus*—131
- s. Leaves less than $2\frac{1}{2}$ " long.
- (a) Branches arched and wide
spreading *Adelia*—159
- (b) Branches neither arched nor
wide spreading
- (1) Blades glossy, bright
green *Ilex*—128
- (2) Blades dull, dark green *Brayodendron*—158
- y. Leaves with more than 1 main vein at
base.
- m. Branches thorny.
- (1) Younger branches streaked length-
wise *Zizyphus*—131
- (2) Younger branches not streaked *Crataegus*— 91
- n. Branches not thorny.
1. Tendrils present *Vitis*—132
2. Tendrils none.
- (a) Branches zigzag *Colubrina*—131
- (b) Branches not zigzag.
- (1) Leaves less than $\frac{3}{4}$ " long *Philadelphus*— 90
- (2) Leaves over $\frac{3}{4}$ " long.
- o. Leaves aromatic, covered with
branched hairs *Croton*—120
- p. Leaves not covered with
branched hairs.
- (1) Leaves large, rounded,
heart-shaped at base *Cercis*— 96
- (2) Leaves large, oval to
ovate, not heart-shaped
at base *Ceanothus*—130

VINES

PLANTS WITHOUT LEAVES.....	Page Cuscuta—166
PLANTS WITH LEAVES.	
I. Leaves compound.	
A. Leaves palmately compound.	
(1) Stems woody	Parthenocissus—133
(2) Stems not woody.	
o. Flowers white	Cyclanthera—202
p. Flowers yellow, leaflets 4	Zornia—110
B. Leaves pinnately compound.	
1. Leaves once-pinnate.	
a. Leaves mainly opposite.	
x. Leaves with odd leaflet at end.	
(1) Flowers white	Clematis— 79
(2) Flowers violet or purple	Viorna— 80
y. Leaves without odd leaflet at end.	
(1) Leaflets 3—4 pairs	Kalstroemia—116
(2) Leaflets 10—14 pairs	Tribulus—114
b. Leaves mainly alternate.	
x. Leaves with tendril at end.	
(1) Leaflets 1 pair	Lathyrus—110
(2) Leaflets 4—8 pairs	Vicia—110
y. Leaves with odd leaflet at end.	
m. Leaflet 1	Dolicholus—108
n. Leaflets 3.	
a. Stems woody.	
1. Stems prickly	Rubus— 90
2. Stems not prickly	Rhus—127
b. Stems not woody.	
(1) Flowers yellow	Dolicholus—108-9
(2) Flowers morocco-red	Psoralea—105
(3) Flowers purplish or violet.	
o. Pods 1-seeded (Rarely 2-seeded)	Lespedeza—108
p. Pods more than 1-seeded	Strophostyles—109
o. Leaflets more than 3.	
(1) Leaflets white-margined	Cracca—102
(2) Leaflets not white-margined.	
o. Flowers yellow	Aeschynomene—111
p. Flowers pink to scarlet	Indigofera—101

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- z. Leaves without odd leaflet at end.
 - (1) Leaflets 3—4 pairs *Kalstroemia*—116
 - (2) Leaflets 10—14 pairs *Tribulus*—114
- 2. Leaves twice-pinnate.
 - (1) Stems prickly, flowers pink *Morongia*— 95
 - (2) Stems not prickly.
 - o. Stems woody *Ampelopsis*—133
 - p. Stems not woody *Cardiospermum*—129
- II. Leaves simple.
 - A. Leaves parallel veined.
 - (1) Vines armed with spines *Smilax*— 66
 - B. Leaves with netted veins.
 - (I) Leaves opposite or whorled.
 - x. Leaves with 1 main vein at base.
 - (1) Leaves in whorls of 4 or 7 *Galium*—199
 - (2) Leaves not whorled.
 - o. Flowers tubular *Acleisanthes*— 75
 - p. Flowers in heads *Lippia*—179
 - q. Flowers neither tubular nor in heads *Isnardia*—146
 - y. Leaves with more than 1 vein at base.
 - m. Sap milky.
 - (1) Flowers green *Vincetoxicum*—164
 - (2) Flowers white *Philabertella*—164
 - n. Sap not milky.
 - r. Leaves small, broader than long *Bowlesia*—153
 - s. Leaves not broader than long.
 - (1) Flowers tubular *Acleisanthes*— 75
 - (2) Flowers not tubular.
 - o. Flowers in compact heads, stems rooting at the nodes *Lippia*—179
 - p. Flowers composite, stems not rooting at nodes *Willugbaeya*—215
 - (II) Leaves alternate.
 - x. Leaves with 1 main vein at base.
 - a. Sap milky *Asclepiodora*—163
 - b. Sap not milky.
 - (1) Plants with stinging hairs *Tragia*—122
 - (2) Plants without stinging hairs.
 - (x) Stems square *Micromeria*—189
 - (y) Stems not square.

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|--|-------------------|
| (1) Flowers white | Solanium—171 |
| (2) Flowers yellow or yellowish. | |
| o. Petals distinct, 4—5 | Jussiaea—146 |
| p. Petals united. Corolla 5-angled | Chamaesaracha—170 |
| (3) Flowers bluish, purplish or purple. | |
| o. Stems rooting at the nodes. | |
| (1) Corolla open bell-shaped | Monniera—192 |
| (2) Corolla tubular | Petunia—173 |
| p. Stems not rooting at the nodes. | |
| (1) Flowers irregular, red-dish-purple | Krameria— 98 |
| y. Leaves with more than 1 vein at base. | |
| a. Sap milky. | |
| (1) Flowers purple or red | Vincetoxicum—164 |
| (2) Flowers not purple or red. | |
| o. Flowers white | Philabertella—164 |
| p. Flowers green | Vincetoxicum—164 |
| b. Sap not milky. | |
| m. Flowers fringed | Passiflora—140-1 |
| n. Flowers not fringed. | |
| r. Tendrils present. | |
| (a) Stems woody. | |
| (1) Leaves fleshy, ill-scented | Cissus—133 |
| (2) Leaves not fleshy | Vitis—132 |
| (b) Stems not woody. | |
| (1) Leaves large, very rough | Curcubita—202 |
| (2) Leaves not rough. | |
| o. Flowers yellow | Ibervillea—201 |
| p. Flowers white | Cyclanthera—202 |
| s. Tendrils none. | |
| (a) Flowers bonnet-shaped | Dolicholus—108-9 |
| (b) Flowers not bonnet-shaped. | |
| (m) Corolla tubular, 2-lipped | Antirrhinum—191 |
| (n) Corolla trumpet-shaped, not 2-lipped. | |
| (1) Corolla white with red throat | Convolvulus—165 |
| (2) Corolla blue or purple | Ipomoea—164-5 |

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(o) Corolla neither tubular nor trumpet-shaped.	
(1) Stems woody (a few tendrils in the inflorescence).....	Cissus—133
(2) Stems not woody.	
o. Leaves small, broader than long, stems prostrate	Bowlesia—153
p. Leaves not broader than long, stems climbing.	
(1) Flowers small, in racemes	Cebatha— 81
(2) Flowers few in a cluster	Solanum—171

DESCRIPTIVE FLORA

TYPHACEAE. Cat-Tail Family.

Typha latifolia L.

Common Cat-tail

Red Mace.

Stately plants growing partly submerged in water or in marshy places. Leaves 2 to 8" long, erect, flat, grasslike, $\frac{3}{8}$ to 1" wide. Inflorescence a stout, dark brown, cylindrical spike, usually constricted in the middle and terminating the shining, green, strong, rather slender stems rising one to two feet above the water. Grows in bunches forming islets in marshes and soft-bottomed ponds, and along margins of marshy-bottomed lakes and water courses. Derives its common name from the imaginary resemblance of the inflorescence to a cat's tail. The leaves are eaten by cattle.

ALISMACEAE. Water-Plantain Family.

Echinodorus cordifolius (L.) Griseb. Bur-head. Mud Babies.

Plants growing in mud along margins of creeks and lakes, and often filling ditches and mud holes. Leaves only basal. Blades erect, 1—4" long, ovate, with more than one vein at base. Flowers white, in circles about the stem of the simple or branched flower stalk. Petals three, white, wilting soon after being gathered. Stamens ten to twelve. Fruit a round head of tiny flattened achenes. Roots fibrous. Blossoms from April to late fall.

Sagittaria lancifolia L.

Arrow-head.

Plants with white flowers in circles of three, large flat, erect leaf-blades terminating long triangular stems, and rooted in mud in middle of brooks and ditches, and in shallow water on margins of creeks and lakes. Flowers about $\frac{3}{4}$ " across, white with yellow or green centers, in whorls of 3 at short intervals along the upper part of the smooth, porous, somewhat stout flower stems. Petals 3, withering quickly. Stamens many, with stout, hairy filaments, and forming a rounded mass of yellow in

the center of the flower. Sepals 3, turned back in fruit against the pedicel. Fruits tiny, winged on the back, pointed with an incurved beak and packed into a dense, flattened head, $\frac{1}{2}$ — $\frac{3}{4}$ " across and forming only on the lower 3 or 4 circles. Leaf blades 4—10" long, entire, lanceolate, with heavy veins radiating from the long, porous stalks that are triangular in cross section, sheathing below, and coming directly from the fibrous roots. Summer and fall. These plants are widely distributed and often take complete possession of swamps, ditches and ponds, covering big areas with their leaves. The starchy tubers were formerly used by the Indians as food.

COMMELINACEAE. Spiderwort Family.

Tradescantia humilis Rose.

Common Spiderwort.

Plants with fragrant purple flowers, conspicuous for their six feathery, purple stamens that are tipped with bright gold anthers. Leaves alternate, sheathing, grass-like, parallel veined, heavily ribbed and usually folded. Flowers in clusters coming out of a cup formed by two opposite, unequal, leaflike bracts at the end of the flower stalk and opening a few at a time, the buds in the center opening first. Sepals 3, glandular-hairy. Petals 3, delicate, equal, generally dark blue, sometimes real purple or white. Pedicels about 1" long, glandular-hairy. Blossoms in March, April and May. Common in low ground, dry rocky hillsides, and loose rich soil of ledges. Roots short, thick, fleshy. Distinguished from other species of this genus by the glandular-hairy sepals and pedicels, and the tuft of simple hairs near the tips of the sepals. Capsules hairy. Named for Tradescant, an English gardener.

* *Commelinantia anomala* (Torr.) Tharp.

(*Tinantia anomala* [Torr.] Clark).

Annuals with ascending or erect, sheathing, parallel-veined leaves and a large lavender-blue flower, 1—1 $\frac{1}{2}$ " across, blossom-

* From manuscript revising and redescribing this species.

ing out of a vertical leaflike sheath at the tip of the plant. Lower leaves narrowly spatulate or oblong, entire, sheathing at base, smooth except for a few hairs on the margin of the lower half. Upper leaves lanceolate or ovate-lanceolate, sheathing and shorter than the lower leaves. Uppermost leaf erect, forming a back ground for the flowers that open one at a time out of a curved cluster of buds. Upper petals 2, large, lavender-blue, broadest at top. Lower petal small, white, inconspicuous. Stamens 6, uppermost 3 distinctly different from the lower 3 in being erect and having purplish tufts of hairs at their tips. Lower 3 curved upward at their tips, the middle one lacking the tuft of hairs below the anthers and the other two bearing the hairs only at their bases. Easily distinguished from *Commelina* by the spathe being erect and never folded.

Commelina angustifolia Michx.

Virginia Day-flower.

Widow's Tears.

Plants with deep blue flowers blossoming out of a boat-shaped sheath. Leaves grass-like, entire, alternate, sheathing. Sepals 3, very small, inconspicuous, white. Stamens 6. Upper 3 erect, having small, 4-lobed anthers without any pollen. Lower 3 pollen-bearing, the middle one incurved and with a larger anther than the rest. Common in low, shaded grounds and ravines. Blossoms from March to November. Petals deliquesce into a crumpled, watery mass when exposed to the sun and usually last but a few hours during the morning of a single day. Distinguished from *Commelinantia* by the boat-shaped sheath out of which the flowers blossom and by the absence of hairs on the filaments. Named for Commelin, a Dutch botanist.

PONTEDERIACEAE. Pickerel-Weed Family.

Pontederia cordata L.

Pickerel-weed.

Wampee.

Blue flowered, glossy-green plants rooted in mud and growing in big, perfectly round clusters in shallow water. Flowers in a loose, heavy spike terminating a long, erect stem naked ex-

cept for one large, parallel-veined, shiny leaf, that is 6—8" long, strongly 2-lobed at base and from 2 to 10" below the flower. Perianth bluish-purple, 6-lobed, with two yellow spots on the uppermost middle lobe. Blossoms throughout the summer. Common in the San Antonio River where it flows through Brackenridge Park. Related to the floating water-hyacinth, *Piaropus crassipes*, which floats by its inflated bladder-like leaf-stalks. Also seen in Brackenridge Park.

BROMELIACEA. Pine-Apple Family.

Tillandsia recurvata L.

Ball Moss.

Bunch Moss.

Epiphytes that form silvery-grey rounded bunches, 2—5" across, commonly on the branches of live oaks, mesquites and elms. Leaves linear, ash-colored, channeled, recurved, 1—3" long; covered with a fuzzy scurf. Flower stalks slender, 1—5" long, terminated by 1 or 2 flowers. Petals delicate lavender or violet-blue, about $\frac{1}{2}$ " long, falling early. Sepals 3, persistent. Stamens 6. Fruit slender, about 1" long. Blossoms in May and June. This plant is commonly considered a parasite, as it is so frequently seen on the dead branches of trees. The plant does not take its nourishment from the branches as the roots do not enter the cambium layer. An interesting account of this plant is given in University Bulletin No. 194, The Anatomy and some Biological Aspects of the "Ball Moss" by Willie Birge.

Tillandsia usneoides L.

Spanish Moss

Long Moss.

(*Dendropogon usneoides* [L] Raf.)

This is the common, ash-colored, apparently leafless plant that hangs in festoons 1—9' long, from the branches of trees, commonly live oaks. Stems string-like, silvery-scurfy, branching and pendulous. Leaves thread-like, scattered, covered with silvery-grey scales. Flowers fragrant, yellow, solitary on short peduncles, seldom noticed. Sepals 3. Petals 3, yellow or greenish. Used for Christmas decorations. Woven into clothing

by the Indians. This plant is most abundant along water-courses.

LILIACEAE. Lily Family.

MELANTHACEAE. Bunch-Flower Family. In *Small's Flora*

Schoenocaulon drummondii. Gray.

Green Lily.

Bulbous plant with a basal cluster of long, slender, channeled, parallel-veined leaves out of which rises a long, naked flower-stalk, 1—2½" high, the upper 2—6" being a spike-like raceme of numerous small, green flowers with showy stamens. Perianth inconspicuous, green, 6-lobed, about ⅛" long. Stamens 6, longer than the perianth, the filaments white or pinkish, the anthers splitting in the middle on the upper side and opening up into a disk, yellow with pollen. Pistil 3-celled, 3-lobed, the 3 styles tapering toward the tips. April and May. Stony hillsides. Rare.

ALLIACEAE. Onion Family. In *Small's Flora*.

Allium helleri Small. Wild Onion. Wild Garlic. "Cebolleta."

A low onion-scented plant springing from a small onion-scented bulb. Leaves all basal, onion-scented, long, narrow, somewhat fleshy. Flowers small, pink rarely white, in clusters 1—2" across at the end of a flower stalk that varies from 3 to 8" in height. Sepals and petals 3 each, alike in size and color. Stamens 6. Bulbs ¼ to ⅜" across. Blossoms from March to June and some times in very late fall following heavy rains. Common in lawns and waste places.

Allium mutabile Michx.

Wild Onion.

Plants similar to Heller's Onion but with longer leaves, a much taller flower stem (12 to 18"), white flowers, and larger bulbs with conspicuous fibrous outer coats. Blossoms in April and May usually when Heller's onion is about through blooming. Not as wide spread as Heller's Onion. In rich, shaded soil.



Tradescantia humilis, our common spiderwort. This genus is widespread and occupies a prominent place in the old-fashioned garden of the North and East. It grows abundantly here in all types of localities. (Courtesy of Mrs. B. Mackensen).



A field of rain lilies (*Cooperia pedunculata*). These fragrant lilies, like *Parkinsonia*, come into blossom following heavy rains, another reason why rains are welcome in Texas. (Courtesy of Mrs. B. Mackensen).

Nothoscordium bivalve (L.) Britton. Crow Poison. False Garlic.
(*Nothoscordium striatum* Jacq.)

Plants with a tuft of narrow, thick, shiny green leaves 2—10" long, coming from a membranous-coated, onion-like bulb, ($\frac{1}{2}$ to $\frac{3}{4}$ " long) several inches below the surface of the ground. Flowers white, in an erect umbel that terminates a slender, round-stemmed, flower stalk, 5—12" long and commonly overtopping the leaves. Sepals and petals 3 each, alike in size and color, and about $\frac{3}{8}$ " long. Stamens 6. Ovary 3-lobed, at the base of the perianth. Similar to the Wild Onion, but leaves and bulb are without the onion scent and the flowers are fewer, somewhat larger, over $\frac{1}{2}$ " across when wide open, white with greenish yellow centers, (never turning pink) and on pedicels twice as long. Common in neglected lawns and waste places. February, March and April and often again as late as November, depending on the rainfall.

Androstephium coeruleum (Scheele) Greene. Wild Hyacinth.
(*Androstephium violaceum* Torr.)

Low plants growing from membranous-coated, flattened, somewhat bowl-shaped bulbs, usually several inches below the surface of the ground. Leaves clustered at the ground, grass-like, thick, almost fleshy, narrow, 6—10" long, usually longer than the flower stalk. Flowers blue to violet, in clusters of 2 to 6 at the end of a short flower stalk, strongly resembling a cultivated hyacinth. Petals and sepals 3 each, fleshy, all alike in size and color, united into a narrow tube, irregularly toothed at the top and with the six anthers attached to the inner wall. Blossoms in February, March and April. On poor, dry, rocky slopes. Rare. Differs from *Quamasia hyacinthina* in the leaves usually being longer than the flower stalk.

LILIACEAE. Lily Family. In *Small's Flora*.

Quamasia hyacinthina (Raf.) Britton. False Hyacinth.
(*Camassia fraseri* Torr.)

Plants 6 to 18" high, growing from edible bulbs, often buried in the ground as deep as 6". Leaves few, grass-like, long,

narrow, usually shorter than the flower stalk. Flowers pale violet or blue, rarely white, about $\frac{1}{2}$ " across, in elongated clusters terminating the simple flower stalk. Sepals and petals 3 each, alike in size and color. Stamens 6. Fruit a 3-angled, 3-celled capsule, broader than long, forming below the flowers as they continue to blossom at the end of the stalk. Well drained slopes of rocky hillsides. Differs from *Androstephium* in the larger number of smaller blossoms, the longer flower stalk, and the stamens not being united at their bases. The genus *Quamasia* is the Latinized form of the old Indian name, Quamash.

DRACENACEAE. *Yucca* Family. In *Small's Flora*.

Yucca treculeana Carr. Spanish Dagger. Don Quixote's Lance.
"Pita."

A palm-like plant sometimes 12' tall, the older plants having a thick trunk with two or three branches from the top of which radiate clusters of straight, stiff, entire, sharp-pointed leaves, 1 to 2½' long, 1 to 3" wide at the base and tapering into a sharp, brownish, black-tipped spine. Flower-stalk stout, branched, 2 to 6' high, coming out of the apex of the stalk and loaded with clusters of large, showy, creamy-white, bell-shaped flowers. Stamens 6. Fruit a heavy, thick-walled, three-celled, oblong, pendant, banana-shaped pod, containing numerous flat seeds. Often cultivated. This is the first of the *Yuccas* to blossom. One plant was seen in blossom Christmas week, 1920. Mexicans gather these leaves while green, soften them over a flame in the morning, and strip off the edges. The ends of these strips are then tied together before they get dry to make them longer. Used for tying bundles of cornstalks, oats and other fodder. The blossoms are gathered in quantities by Mexicans and cooked and prepared like cabbage. The flowers are also used for pickles.

Yucca rupicola Scheele.

Twisted-leaved Yucca.

Apparently stemless plants, with a great cluster of stiff, slightly twisted, finely-toothed and brown-margined leaves, 1 to

2½' long. Flowers large, bell-like, greenish white, in showy clusters on a long, branched flower-stalk, 1 to 3' tall, that rises out of the crown of sharp-pointed basal leaves. Sepals and petals 3 each, about 2" long, alike in size, shape and color. Stamens 6, white, fleshy, ½ to 1" long, covered with short fine hairs. Fruit a three-lobed, thin-walled pod, containing many flat seeds. Blossoms in April and May. On dry, rocky, limestone hills and hillsides.

Yucca tenuistyla Trelease.

Bear-grass.

Plant apparently stemless or with one or two very short, woody trunks at the end of which radiate narrow, stiff, sharp-pointed, grass-like leaves, 8—18" long, with white margins that shred white, thread-like fibres. Flowers similar to the Twisted-leaved Yucca. Blossoms in April, May and June. Rocky hillsides. Will do well in low ground. These leaves were shredded by the pioneers and used for hanging bacon and sewing sacks. The fibre of these leaves is finer in texture than "Sisal hemp" and of equal strength.

Nolina texana Watson.

Slender Bear-grass.

Basket Grass.

Bunch-grass.

Plants with many stout, branching flower stalks not rising above the long, slender, fibrous leaves. Flowers small, white, scattered singly or in clusters along the main stem or branches of the stalks. Parts of perianth 6. Stamens 6. Leaves grass-like, tough, fibrous, narrow, triangular at base, 2 to 3' long and from 1/8 to 3/16" wide, crowded on the thick, inconspicuous, short, woody trunk. Fruits small, about 1/6" long, three-winged. Blossoms March, April, May and June. Grows on ledges of limestone bluffs, the long, green masses of leaves overhanging the ledge. Leaves used for making basket handles. Plant first collected on the Cibolo Creek by Ferdinand Lindheimer, in 1846.

Nolina lindheimeri (Scheele) S. Wats. Slender Bear-grass.
Devil's Shoestring.

Similar to *Nolina texana* but has flat, finely saw-toothed, flexible leaves and a single erect, stout, branched flower-stalk longer than the leaves at blossoming time. Blossoms in May and June. Grows on dry, rocky hillsides and ledges of limestone bluffs. Not as common as the Basket Grass.

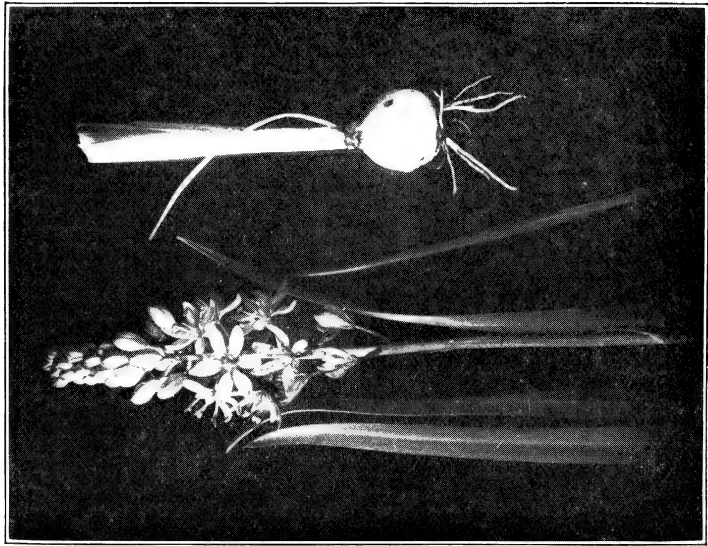
Dasyllirion texanum Scheele. Saw Yucca. "Sotol."

Plants similar to *Yucca rupicola* in having a great rosette of spreading leaves but different in that the leaves are much longer and armed with hooked spines on the toothed margins. Flower stalk straight and high, like a big candle, never branched, the catkin-like flowers blooming in the axils of leaflike, 1 to 2" long bracts that ascend the stalk to the tip. Fruit small, 3-winged. Blossoms in June. Grows on dry, limestone hills and hillsides. Often used in parks and gardens for ornament. Not as common as the other Yucca. This is called *Sotol* in many parts of Western Texas and is well known to cattlemen under that name (which is Mexican). The plants are often cut and fed to stock in Trans-Pecos, Texas.

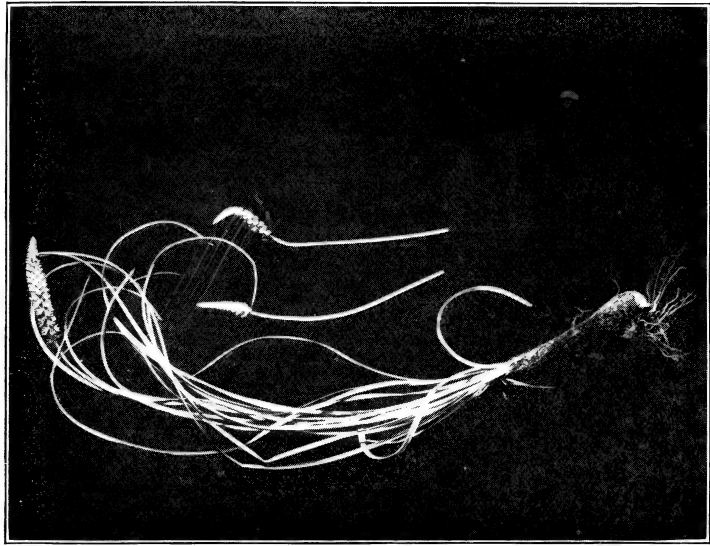
SMILACACEAE. *Smilax* Family. In *Small's Flora*.

Smilax Bona-nox L. Stretch-berry. Green Briar. Catbriar.

A climbing slender vine with green, often zigzag stems armed with slender straight spines and bearing a pair of tendrils at the base of the leaf stalk. Leaves simple, alternate. Blades shiny, leathery, almost evergreen in habit, 2—4" long, entire, triangular, heart-shaped or 3-lobed. Flowers inconspicuous, pale green, 6-lobed, clustered at the ends of slender axillary stalks. Fruits black, 1-seeded, the size of peas, 8 to 20 in each cluster. Children use the berries in chewing gum. Blooms in April. Fruit ripens in late fall. In thickets and low grounds along streams.



Wild hyacinth (*Quamasia hyacinthina*), a favorite of well drained hillsides of the Edwards Plateau where it is appreciated only by the few who chance to find it in its rough native haunts. (Courtesy of B. C. Tharp).



Green lily (*Schoenocaulon drummondii*), found in the same localities as *Quamasia* but easily distinguished from it by the small green perianth and showy stamens. (Courtesy of B. C. Tharp).

AMARYLLIDACEAE. Amaryllis Family.

LEUCOJACEAE. Amaryllis Family. In Small's Flora.

Manfreda maculosa (Jacobi) Rose. Wild Tuberose. Amole Plant.
Soap Plant.

Lily-like plant with leaves clustered in a rosette close to the ground, fleshy, thick and spongy, concave their full length, and mottled with darker green or purplish spots. Flower stalks single, rising out of the rosette of leaves, 2 to 4' tall, and blossoming on about the upper third of the stalk which branches above similar to the Yuccas. Flowers waxy, resembling a cultivated tuberose, only much larger, greenish white at first and turning pink and reddish-purple with age. Perianth 6-parted. Stamens 6, with fleshy filaments that turn red with age and with tips terminating in narrow anthers about $\frac{1}{2}$ " long. Fruit a several seeded, oval pod. Blossoms in late May and June. Grows in sandy soil. Rare here. Roots are used as a substitute for soap by Mexicans and Indians. To prepare for use, take root, cut in pieces and soak in water for several days. Both water and root may be used as soap.

Agave americana L. Century Plant. "Agave." "Maguey."

A Yucca-like plant having a mammoth rosette of enormous gray and blue-green, stiff and spongy, coarsely spine-toothed leaves thick as boards, rising straight from the bud of the great rosette, turning back as the plant grows and showing on their smooth curved inner surface the lovely print of the lace-edge pattern of the inner leaf margins that were pressed against it. A single giant stalk rises out of the leaves, 10 to 20', is branched above into fan-shaped flower clusters, that resemble big pieces of honeycomb at a distance, at right angles to the main stalk. Flowers cream colored, turned upward and never drooping as in the Yuccas. Plants blossom at about the age of twenty years, fruit and die, leaving many offsets which come to maturity almost yearly. Blossoms the last part of May, thru June. Escaped from gardens. Cultivated for ornament. The plant

received its popular name from the popular notion that it blooms every one hundred years.

The sap of plants related to this species is drawn from a large cavity hollowed out of the center of the plant by taking out the bud. A good illustration of this may be found in the July, 1916, number of the National Geographic Magazine. The sap that accumulates from the cut leaves is gathered twice a day by the Mexicans and converted into their National beverage called "Mescal", "Pulque" or "Tequila." Tequila goes through three processes. The first is pulque, which is a milky white, stringy substance taken raw from the plant. This ferments so rapidly that it will break a bottle. Recently something has been added to prevent this rapid fermentation. The second stage is mescal, which looks like water, only is yellowish, and is stronger than whisky. Tequila is the distilled liquid and is colorless like water. The Agave grows much larger in Mexico where entire haciendas are given up to its cultivation. The leaves are often fully 8' long and proportionately broad and thick. The plants which are used in Mexico are not *A. americana* but related and similar species. *A. americana* has been grown in Europe for three hundred years, but it is not known where it is native.

This plant produces the largest flower stalk in the United States. It also makes unexcelled cough syrup and poultices by heating the leaves, pressing out the water, and preparing in the usual way.

Atamosco texana (Herb.) Green. Copper Lily. Atamosco Lily. (*Zephranthes texana* Herb.)

This copper-colored lily springs out of a cluster of long, narrow, smooth leaves that come out of a bulb several inches below the surface of the ground. Flower stem is leafless, slender, 6 to 10" long. Bulb is small, round, like an onion-set. Sepals and petals 3 each, alike in size and color. Fruit a 3-lobed pod. Blossoms in June and July, usually following several days rain.

Cooperia pedunculata Herb.

Rain Lily.

Prairie Lily.

Fragrant, solitary, lily-like, white flowers, turning pink with age, 1 to 2" across when open, singly terminating slender flower stalks (6 to 14" long) that come directly out of the ground following heavy rains. Leaves all basal, grass-like, thick, firm, parallel-veined, smooth, 5 to 12" long, coming from a large, thick, onion-like bulb $\frac{1}{2}$ to $1\frac{1}{2}$ " across and about as long. Stamens 6, almost hidden in the tube of the perianth. These sweet-scented lilies are the joy of every San Antonio door-yard, city field, and wayside. As they flash across and through the grass under trees or out in the dim distance, they look like long rays of white light. Differs from Wild onion and Crow poison in the very large bulb, longer leaves, and one large blossom terminating each stalk.

Cooperia drummondii Herb.

Similar to *Cooperia pedunculata* in general appearance and in the habit of blossoming following rains. But bulbs blossom later, usually in the fall, the flowers are smaller (only about $\frac{1}{2}$ the size of *Cooperia pedunculata*), flower-stalk usually more slender and taller (6—18"), tube of perianth longer ($2\frac{1}{2}$ —5" long as compared to 1— $1\frac{1}{2}$ "), and lobes of the perianth $\frac{1}{2}$ — $\frac{3}{4}$ " long instead of 1— $1\frac{1}{2}$ ". Blossoms do not turn pink until they are withered. In lawns and waste places. Summer to fall.

IRIDACEAE. Iris Family.

IXIACEAE. Iris Family. In Small's Flora.

Nemastylis acuta (Bart.) Herb.

Celestials.

These beautiful, large, delicate blue lilies bloom one at a time on flattened stems that come out of a grass-like sheath. Leaves few, long, grass-like, conspicuously plaited lengthwise. Flowers few, bright delicate blue, showy, $1\frac{1}{2}$ to 2" across. Petals and sepals 3 each, alike in color, unequal, slightly white at base. Stamens three, with long anthers that twist and coil with age.

Stigma divided into 6 slender, radiating, purple or blue tinted lobes. Blossoms in March and April. Wide spread.

Sisyrinchium varians Bickness.

Blue-eyed Grass.

These plants have flattened stems and look like tufts of grass bearing dainty, deep blue or violet flowers usually with conspicuous yellow centers. Leaves flattened, folded lengthwise, parallel-veined, sheathing. Flowers less than one inch across, blue turning purple, blossoming one at a time out of the axil of the leaf. Petals and sepals 3 each, alike in size and color, delicate, yellow at base. Stamens 3, small, united to the top. March and April. In meadows, roadsides and dry rocky hillsides. The flowers close at night.

Sisyrinchium minus Engelm. & Gray. Dwarf Blue-eyed Grass.

Low, tufted, grass-like plants strongly resembling *Sisyrinchium varians*, but much smaller (not over 6" tall) and with tiny reddish-purple flowers striped with darker lines and less than $\frac{1}{4}$ " across. March and April. In moist soil and dry places, usually where the soil is fine and compact.

URTICACEAE. Nettle Family.

Urtica chamaedryoides Pursh.

Stinging Nettle.

Plants with stinging hairs. Leaves simple, opposite. Blades ovate or lanceolate, blunt-tipped, coarsely saw-toothed, 3-veined at base, on long petioles, and covered on the upper side with hairs that are black at the base, making the blades look as if they were dotted with black glands. Flowers very small, white, in dense globular clusters in the axils of the leaves. Stamens four. Blossoms from February to October. Widespread.

POLYGONACEAE. Buckwheat Family.

Eriogonum longifolium Nutt.

Wild Buckwheat.

Summer and fall blossoming plants, one to two feet tall, with one or two slender stalks growing from a very thick root.

Basal leaves few, green above and white underneath, the blades entire, 2 to 3" long, less than 1" wide, and tapering into a long petiole. Stem leaves few, 1 to 2" long, oblong-linear, whitish and silky below. Stems branched above into several horizontal leafless stems with flowers bunched on the erect secondary stems that expand at their tips into the reddish-fringed, goblet-like involucre holding many tiny, yellowish flowers. Calyx 5-lobed, silky-woolly, containing oblong anthers and many strap-shaped appendages. On dry hills. Not common. Eriogonum has its origin in the Greek words *erion*, wool, *gonu*, knee, from the woolly and jointed stems.

Rumex altissimus Wood. Pale Dock. Peach-leaved Dock.

Plant with leafy stems, sheathed with conspicuous papery stipules, and bearing small inconspicuous greenish flowers clustered at close intervals on the upper part of the main stems and its ascending branches, the flowers developing 3-sided fruits. Leaves simple, alternate. Blades oblong to lanceolate, 2—8" long, ascending, wavy-margined. Stamens 6. Styles 3. Fruit triangular, with 3 reticulated green or purplish wings and a white thick ridge on each face of the triangle. Fruits are in clusters along the stalk similar to the flowers and usually conspicuous through their rich coloring. March to fall. In low or waste ground.

Polygonum lapathifolium L. Smart-weed.
(*Persicaria lapathifolia* [L.] S. F. Gray)

Plants conspicuously sheathed at their swollen joints. Leaves simple, alternate. Blades varying from broadly lanceolate to narrowly lanceolate, long pointed, and thickly dotted with small, sticky glands. Flowers small, pink, in spikes 1 to 3" long, that are often in pairs. Stamens 5. Fruits small, shiny, black achenes, that are concave on both sides. Summer and fall. Grows in mud and low waste ground, often standing in shallow water on margins of lakes and streams. All the specimens I have seen are broad leaved and bushy when growing in shallow water,

and narrowly lanceolate-leaved and sparingly branched when growing on gravel banks or similar situations out of water. Polygonum originates from the Greek *polys*, many *gonu*, knee, from the jointed stems.

AMARANTHACEAE. Amaranth Family.

Froelichia drummondii Moq.

Cotton Weed.

Tall, wand-like plants, 2 to 6' high, with few pairs of pale thick leaves close to the ground, and long naked stems branching near the end into short cottony spikes. Leaves simple, opposite. Blades entire, thickish, oblong or oblanceolate, 2—6" long, conspicuously covered with long appressed hairs underneath, and usually having a thick pinkish midrib. Flowers small, inconspicuous, difficult to analyze due to their being embedded in the woolly-hairy covering of the five small sepals. Petals none. In sandy soil to the south and east of San Antonio. Named for Froelich, a German botanist.

CORRIGIOLACEAE. Whitlow-Wort Family.

Paronychia lindheimeri Engelm.

Forking Whitlow-wort.

Low, stiff, slender-stemmed, much forked, intricately branched, wiry plant. Leaves less than 1" long, very narrow, mostly opposite. Flowers inconspicuous, greenish yellow. In dry soil. A plant not often noticed unless one is looking for it. The genus receives its name from the Gr. *paronychia*, swelling about a nail.

PHYTOLACCACEAE. Pokeweed Family.

PETIVERACEAE. Pokeweed Family. In Small's Flora.

Rivina humilis L.

Ink-berry.

Dark green, bushy plants with slender spikes of pretty pink flowers interlacing wayside and hillside fences, bushes and brush. Leaves simple, alternate. Blades 1 to 6" long, ovate, long-pointed, with slightly wavy margins. Flowers pink, slightly less

than $\frac{1}{4}$ " across, in terminal spikes 1 to 4" long. Petal-like sepals four, small, pink or white. Petals none. Stamens 4, very small. Flowers followed by 1-seeded, fleshy, red, stone-fruits smaller than peas that form up the raceme as it continues to blossom at the tip. Summer and Fall.

Phytolacca decandra L. Poke-berry. Ink-berry. Pigeon-berry.

These plants are stout, branch like a tree, are three to six feet tall, and have large poisonous roots. Leaf-blades large, tapering, four to eight inches long, ovate to oblong-ovate, slightly wavy. Flowers white or greenish white, small, in (long) heavy sprays, six to ten inches long. Petals none. Sepals 5, white, small, circling the rapidly developing 5 to 12-lobed, round but flattened fruits. Stamens 10. The long drooping clusters of rich, dark purple, crimson juiced, 5 to 12 seeded fruits hanging on bright red and purple stemmed stalks are very attractive to birds. Mrs. Slater of El Paso writes: "The berries are bustin' full of red ink that boys write spirit letters with, pretending like it's blood." The word "Poke" is derived from pocan, the Indian name for any plant yielding a red or yellow dye. An ointment made from the plant is used in treating rheumatism and ringworm. The roots are very large, sometimes as much as 6" in diameter, white inside and brown on the surface. They are divided into 2 or 3 principal bunches. On account of its size and texture, it is sliced to give it an opportunity to dry properly. It should be dug in the fall.

The young shoots in spring are cooked like asparagus and some people consider them better. Large quantities of them are sold in the Washington markets every spring. Care, however, must be taken to pour off the water in which the shoots are first boiled, because of the poisonous substances dissolved in it. Do not eat any of the root.

ALLIONACEAE. Four-O'clock Family.

Mirabilis jalapa L.

Four-O'clock.

"Maravilla"

This plant is easily noticed through its showy, deep pink to

red, tubular flowers that open late in the afternoon and liven the deep green, much branched, weak-stemmed bushy plants. Stems thickened and forked at the joints. Leaves simple, opposite. Blades ovate, often as broad as long, entire. Flowers trumpet-shaped, $1\frac{1}{2}$ to 2" long, opening wide at the top, sweet scented and conspicuous for the 5 long, red, thread like stamens and pistil which extend beyond the colored tube. Blossoms all summer into late fall. Rare in the wilder parts of the country. Fairly common in city wastes where it has escaped cultivation. This often has white and yellow flowers, and is often variegated in different colors. The variegated flowers are the reason for the name "Maravilla," and also "Marvel of Peru" which was formerly applied.

Allionia nyctaginia Michx.

Umbrella-wort.

Plants, 1 to $2\frac{1}{2}$ ' tall, with forking stems, fairly thick, opposite leaves, and bright true purple or purplish flowers, $\frac{1}{2}$ to $\frac{5}{8}$ " across, the colored calyxes of which open in the evening and fall early the following day or at the slightest disturbance. Leaves simple, in distant pairs on the stems. Blades lanceolate to ovate, 1 to $2\frac{1}{4}$ " long. Calyx 5-lobed. Stamens 5, unequal in length, exceeding the colored calyx. Involucre small at first but continuing to grow as the seeds develop. At maturity this green or purplish, papery involucre is wide open, about $\frac{1}{2}$ " across and resembles an umbrella with 1 to 3 small, oblong, 5-ridged fruits resembling warts fastened to its center. The plant is so little seen in blossom that these umbrella like involucres are generally mistaken for corollas. Widespread, but not common. March to late summer. Named for Allioni, an Italian botanist.

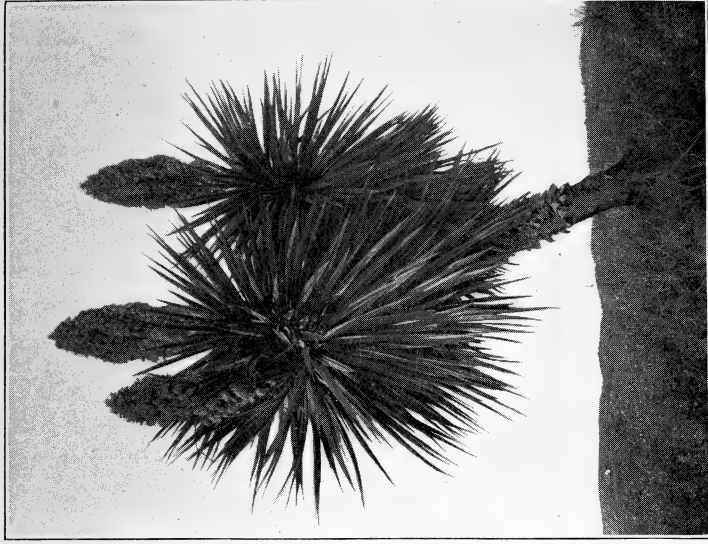
Allionia linearis Pursh.

Umbrella-wort.

Few leaved plant, 1—2' high, branched at the base, the stems erect and forking, and bearing opposite leaves and loose clusters of 1 to 5 mallow-purple flowers, opening a few each day at sundown. Leaves simple, opposite. Blades thick, linear, 1—4" long, entire or wavy, sessile or short-stalked. Involucre (often



Agave americana, the common century plant. This plant produces the largest flower stalk in the United States and perhaps in the world. But this honor is dearly paid for, as the plant dies soon after the blossom reaches maturity. The sap of several related species is converted into 'pulque', 'mescal', and 'tequila' in Mexico.



Spanish bayonet (*Yucca treculeana*), in blossom, showing its value as an ornamental plant. (Courtesy of Mrs. B. Mackensen).

mistaken for a calyx) small, reddish, glandular-hairy, 5-lobed increasing in size as the solitary fruit develops within its folds. At maturity this involucre opens wide exposing its scurfy, 5-lobed fruit, the whole resembling a wart fastened in the middle of an umbrella, giving rise to its popular name. Corolla-like calyx similar to the preceding plant.

Nyctaginia capitata Chois.

Devil's Bouquet.

An unusual and striking greyish-green, ill-scented plant with thick, frequently sticky, jointed stems that straggle awkwardly over the ground and fling out bright patches of scarlet at or near the ends of the forked branches. Leaves simple, opposite. Blades thickish, entire or wavy, ovate-triangular or broadly lanceolate. Flowers scarlet with a musky odor, in clusters about two inches across. Calyx scarlet, tubular, 1—1¼ inches long, five-lobed, covered with sticky hairs on the outside. Stamens long, thread-like, extending fully one inch beyond the colored calyx tube. Root large and thick like a parsnip. April to July. Widespread but not common. Flowers open in the evening and close in the hot sun.

Acleisanthes longiflora A. Gray.

Angels' Trumpet.

Trailing plants with long, vine-like, forking stems and remarkably long, white, slender-tubed, fragrant flowers that bloom at night and gradually close with the advance of the morning sun. Leaves simple, opposite. Blades thick, lanceolate, one to two inches long, entire or wavy. Flowers four to six inches long. Stamens 5, unequal. In open ground, roadsides and along railroad tracks.

Boerhaavia caribaea Jacq.

Wine Flower.

Plants with thick, spreading, forked branches, opposite, ovate leaves that are white underneath, and slender, axillary, usually wiry, sticky stems each ending in a small cluster of tiny wine red flowers or equally small clusters of sticky, club-shaped, 5-ribbed, nut-like seeds. Leaves usually opposite. Blades ovate,

thickish, usually unequal, dull green or purplish above and frosted white beneath. Flowers tiny, bell-like, 5-lobed, about 1/16" across, wine red, sticky. The fruits are very sticky and adhere to feathers of chickens and other birds. April to late fall. Roadsides and weed patches.

Boerhaavia erecta L.

Plant with small ovate leaves that are green (often purplish-margined) above and silvery-green below, and spreading branches, the ends leafless and divided into many hair-like branches bearing small clusters of minute white flowers or equally small, inverted cone-shaped, angled fruits. Leaves simple, alternate or opposite. Blades ovate to lanceolate, 1/2 to 1 1/2" long, wavy-margined, usually unequal-sided at the base. Leaf-stalks as long as or shorter than the blades. Flowers less than 1/8" long, white or pale lavender, in clusters of 2 to 6. Fruits less than 1/8" long, inverted cone-shaped, 5-angled, the top flat. Summer to fall. Growing in alleys, along railroad tracks and in waste ground.

PORTULACACEAE. Purslane Family.

Talinum lineare H. B. K.

Fame Flower

Smooth, leafy plants, 4 to 16" high with two to several slender, brittle branches coming from a slightly shrubby base, and slightly fleshy, linear leaves, 1 to 3" long, often with margins rolled back. Flowers solitary, on short axillary pedicels (up to 3/4" long) in the axils of the leaves, bright yellow, the 5 petals falling early. Stamens about 20. Fruit a three-valved pod, the size of a pea, solitary on a recurved pedicel. The tiny, black, bean-shaped seeds are marked with curved ridges and a tiny white spot. Summer and fall. In dry open ground.

Portulaca pilosa L. Moss Rose. Portulaca. Flowering Moss.

These low, fleshy-stemmed plants grow close to the ground and have tufts of long soft hairs in the axils of the crowded, fleshy leaves. Flowers delicate, deep pink or rose or red, open

only in the sunlight, and resembling points of flame at the tips of the short, leafy branches. Petals four to six, usually five. Stamens fifteen to twenty-five. Fruit a one-celled pod hidden in the tuft of hairs at the end of the stem and opening by a circular lid, which drops off. Summer. In dry, rocky ground. Rare.

CARYOPHYLLACEAE. Pink Family.

ALSINACEAE. Chickweed Family. In Small's Flora.

Arenaria benthamii Fenzl.

Sandwort.

Inconspicuous annual, 4 to 10" high, with almost thread-like repeatedly forked branches, small opposite leaves, and very small, inconspicuous white flowers, solitary on threadlike axillary pedicels 1 to 1½" long. Leaves simple, opposite. Blades ¼ to ½" long, oblong or elliptic, narrowed at each end, sessile. Sepals 5, very small. Petals 5, white, nearly as long as the sepals. Capsule ovoid, about 1/12" long. In dry ground. February, March and April.

Stellaria media (L.) Smith.
(*Alsine media* L.)

Chickweed.

Sprawling plants with weak stems spreading at the base and threading the grass and low weeds. Leaves opposite, entire. Blades ovate to elliptical, narrowed at each end, less than one inch long, with petioles that are usually longer than the blades. Flowers minute, white, resembling little stars set in the leafy ends of the stems or branches. Petals four or five, deeply two-parted or cleft, shorter than the sepals. Stamens three. Stigma 3-lobed. Seed cases small, about 1/12" long, terminating slender pedicels that are ½ to 1" long, solitary in the axil of one of a pair of opposite leaves. Blossoms all year depending on the moisture supply. The stems take root at the nodes and spread rapidly, either threading the grass or forming thick mats in waste ground. *Stellaria* is the Latin name for Star-like.

Cerastium longipedunculatum Muhl.

Powder-horn.

Slender stemmed plants, 2 to 12" high, with sticky stems, forked branching, tiny white flowers and slender membranous pods, $\frac{1}{2}$ " or less long, containing many small seeds, that make them look like an old-fashioned powder horn. Stem leaves opposite. Blades oblong, linear-oblong, or lanceolate, $\frac{1}{2}$ to 2" long, entire. Flowers white, less than $\frac{1}{4}$ " across. Sepals 5, fully one-third shorter than the petals. Petals 5, white, deeply notched at their tips. Stamens usually 10, of two lengths. Stigma 5-lobed. Pods when ripe resemble a slender, 10-toothed, membranous, straw-colored tubular corolla, $\frac{1}{2}$ " long or less. Seeds many, very small, filling about one-third of the pod. February to July. Low, moist ground, especially river bottoms and creek banks. Genus has its origin in the Gr. kerastion, little horn, from the pods.

CARYOPHYLLACEAE. *Pink Family. In Small's Flora.*

Silene antirrhina L.

Sleepy Catchfly.

Tall, slender plants with sticky, jointed stems. Leaves opposite. Blades entire, linear to lanceolate, occurring in pairs alternately along the stem. Flowers small, pinkish or white, in loose branching clusters. The pale green, ribbed, five-toothed, greatly swollen calyx is the most distinguishable part of the flower. Petals inconspicuous, deeply notched, pink or white at the tip. The sticky joints often entangle insects. March to June. In fields and pastures.

RANUNCULACEAE. Crowfoot Family.

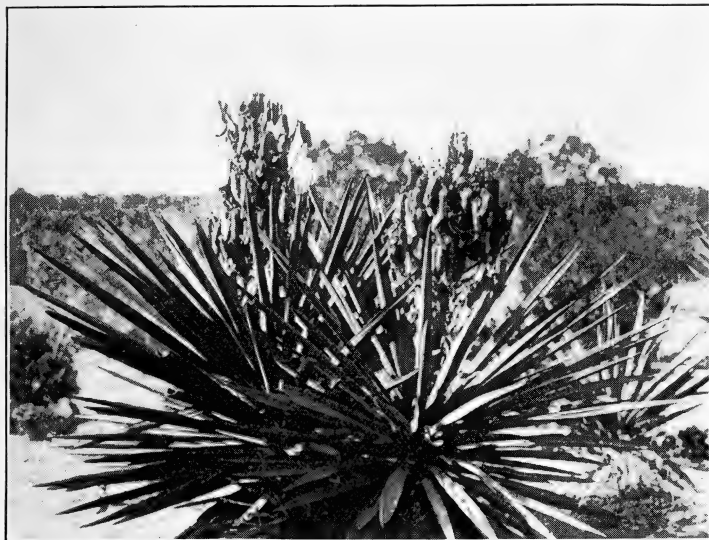
Delphinium carolinianum Walt.

Larkspur.

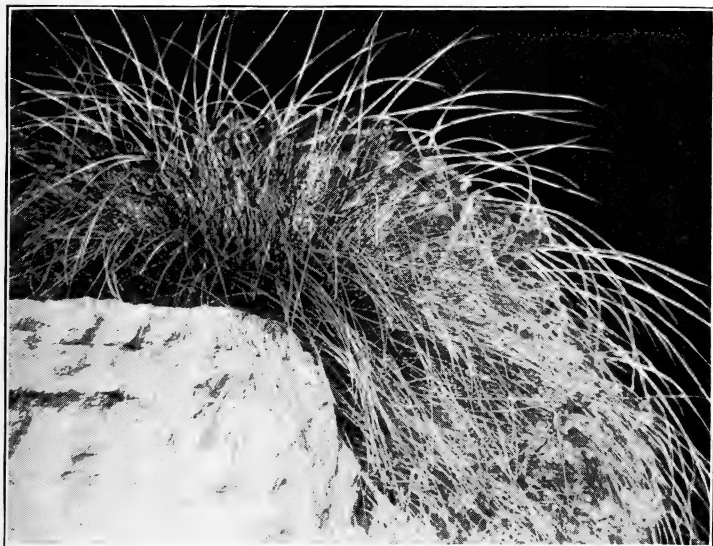
Delphinium.

"Espuela del caballero"

Early blossoming plants with short, tapering tuberous roots and big spires of sky blue spurred flowers. Leaves broad, often rounded in outline, a few basal, the others (also few) alternate on the stem. Leaf blades broad, deeply cut into narrow-toothed



Spanish bayonet (*Yucca treculeana*) in fruit. The leaves of this plant are softened, torn into strips and used by Mexicans for tying bundles of corn and other forage crops.



Slender bear-grass (*Nolina texana*). The long fibrous leaves which overhang limestone rocks and boulders are used for making basket handles. Found only in the limestone districts.

or cleft segments. Flowers irregular, oddly shaped, spurred, distributed on about the upper third of the flower stalks which are one to three feet tall. Fruit three slender, erect pods splitting on the inner side. Not as common as the following species.

Delphinium albescens Rydb. Larkspur. Delphinium.

Similar to *Delphinium carolinianum* but with sepals white or nearly so (often pale violet) and with a green spot on each. Lateral petals bearded, 2-cleft, the lobes not diverging. March to May. Common.

Anemone decapetala Ard. Anemone.

First flower of spring under the oaks and elms and living in pockets of weathered limestone rocks, in patches by the roads and following the sharp lines of creeks and ravines. Rising directly from the oblong, tuberous root are one to several slender three-forked leaf-stalks with three leaflets at the end of each fork. Leaflets generally purple underneath. The beautiful, delicate blossoms are about an inch across, white (frequently pink underneath), blue or bluish-purple, and tip the one to two or three stalks that come out of the cluster of root leaves, each stalk bearing a circle of deeply cut, leaf-like bracts midway between the blossom and the ground. Sepals and petals about a dozen. Stamens numerous, unequal in length. Fruit a fuzzy cylinder 1 to 3" long, forming the upper portion of the flower stalk and made up of small flat achenes buried in woolly hairs. Named for Anemos, the wind god of the Greeks, who used the Windflower to announce his presence and mark his course in the spring. January, February and March. (One or more flowers may come out of the circle of leaf-like bracts).

Clematis drummondii Torr & Gray. Texas Virgin's Bower.
 Grey Beard. Grand-dad.

Small vine generally climbing over bushes and fences, with noticeable white flowers in summer and conspicuous plumes of silky feathery-tailed seeds in the Autumn. Leaves pinnately

compound, opposite. Leaflets three to seven, these usually three lobed. Flowers white, about $\frac{3}{4}$ " across, few in a cluster, at intervals along short branches, one in the axil of each of the upper opposite leaves. Petal like sepals four, white, silky beneath. Petals none. Stamens numerous, white, showy. June and July. Widespread.

Clematis coccinea Engelm. Leather-flower. Scarlet Clematis (*Viorna coccinea* [Engelm] Small.)

A very leafy vine climbing over bushes and fences in rich soil and hanging on by its twisting, curling leaf-stalks. The solitary purple, bell shaped flowers on short stems are almost hidden by the foliage. The name leather-flower aptly describes the texture of the four thick petal like sepals which are glossy outside and velvety within and have slightly recurved tips. Leaves compound, opposite. Leaflets broadly ovate, entire, heavily veined underneath. Stamens numerous. The short, stout and flat fruits have silky plumed tails about an inch long, and form a ball about two inches across. March, April and May. On shaded ledges along streams, moist ravines and river bottoms. Rare.

Clematis simsii Sweet. Leather-flower. Purple Clematis. (*Viorna simsii* [Sweet] Small.) Pipe Stem.

Similar to *Viorna coccinea* but with violet flowers and leaflets thinner, generally three-lobed with one small thumb like lobe. March, April and May. (River bottoms). Differs technically from the above species in the pubescent filaments, margined, recurved sepals, and thinner leaf blades. The flat achenes have silky-hairy but not plumose styles. Fairly common.

Ranunculus macranthus Scheele. Buttercup. Gold-cup. Crow-foot.

These are the glittering, golden-yellow saucers, 1" or more across that brighten the shaded hillsides and deep ravines. Leaves with long, slender, hairy petioles that are largely tufted

near the ground, blades deeply cut into three to seven large, entire, toothed or incised lobes. Upper leaves few, clasping the stems where they branch. Sepals five, pale green or yellowish. Petals seven to sixteen, deep, glossy gold as if enameled, and with scale-like nectar glands at base of inner side. Roots slightly thickened. Fruits compact, oblong clusters of small, flattened, beaked achenes. March and April.

MENISPERMACEAE. Moonseed Family.

Cabatha carolina (L.) Britton. Coral-bead. Margil.
(*Cocculus carolinus* [L.] DC.)

Slender-stemmed trailing or climbing vine conspicuous in the fall for its brilliant clusters of scarlet, edible stone fruits the size of small peas. Leaves simple, alternate. Blades usually three-lobed, triangular or broader, often rounded, downy beneath. Flowers minute, creamy white or greenish yellow, in slender simple or branched racemes. June to fall. Widespread, usually climbing over fences and in thickets near streams.

NYMPHAEACEAE. Waterlily Family.

Castalia elegans (Hook.) Greene. Waterlily. Pondlily.

This white or blue tinted "Queen of the waters" floats majestically on the surface of the water in a field of large, green leaves called "pads". Flowers fragrant, two to three inches across and like the leaves borne on long, slender, round, rubbery stems that rise to the surface from thick rootstocks. Sepals green with purple lines. Petals numerous, white frequently tinted with blue. Leaf-blades large, floating, six to eight inches long, nearly as broad, much like a rounded horseshoe in shape, smooth, shiny and green above, usually purple or reddish on the underside. March to fall. Flowers open at sunrise and close toward noon, except on cloudy days. In ponds, streams, and in quiet, shallow parts of lakes.

Nymphaea microcarpa Miller and Standley. Yellow Pond Lily.
Cow Lily. "Nenufar". Spatter-dock.

These are the attractive golden cups that usually stand a few inches above the surface of the water or float idly amidst shining green patches of floating "Lily-pads" in slow moving streams or stagnant pools. Flowers stiff and waxy, resembling a yellowish-green cup about two inches across and with two circles each of three broad, concave, thick petal-like sepals. Inside of this yellow bowl are the small but real, short, oblong, fleshy stamen-like petals forming a ring around the thick pistil which looks like a big, thick, flat-topped button. Under and around the disk shaped stigma are several rows or layers of flat stamens which recurve at maturity, forming a thick fringe which fills the cup. The genus name is derived from the Greek *nymphaea* meaning water nymph.

BERBERIDACEAE. Barberry Family.

PODOPHYLLACEAE. Barberry Family. In *Small's Flora*.
Berberis trifoliolata Moric. Agarita "Agrito" Chaparral Berry.

Evergreen bush with alternate, spiny, 3-foliolate leaves and clusters of small, yellow, honey-fragrant flowers that remind one of miniature roses: Leaflets stiff, with three to seven spine-toothed lobes. Petals six. Stamens six. Fruit a red, acid, stony, edible berry, the size of a pea, gathered in April and May for making wines and jellies. Wood and roots yellow and used for making a yellow dye. February to April. In dry soil and on stony hillsides. Bushes frequently grow close up to mesquite trunks in association with other well-armed shrubs.

PAPAVERACEAE. Poppy Family.

Argemone alba Lestib. White Prickly Poppy. Mexican Poppy.
"Amapola Mexicana"

Thistle-like, stout, prickly-stemmed, erect plants with big paper-white flowers. Stem leaves alternate. Blades two to six

inches long, very prickly, pale, generally whitish along the veins, shallowly or deeply lobed. Flowers two to four inches across. Petals four to six, one to two inches long and nearly as broad. Stamens numerous, yellow, turning black with age. Fruit prickly and opening at the top. Buds oblong, with 3 erect spine-tipped horns at the top. Broken stems exude an orange-colored juice.

Argemone intermedia Sweet.

Mexican Poppy.

White Prickly Poppy.

Similar to *Argemone alba* but stems are more prickly, flowers sessile, and horns of the buds diverge (never erect). Widespread.

Argemone rosea Coulter

Red Prickly Poppy

Similar to *Argemone alba* but having red or bright rose-purple petals. In sandy soil. Very rare in San Antonio. The genus receives its name from the Gr. *argemone*, a poppy used for eye troubles.

FUMARIACEAE. Fumitory Family.

Capnoides curvisiliquum (Engelm.) Kuntze. Golden Corydalis.

Scrambled Eggs.

These low and spreading, somewhat fleshy-stemmed, early flowering plants bear bright yellow, spurred flowers blooming thickly at the end of the several branches. Leaves largely pinnately compound, alternate, with finely cut and divided leaflets. Others simple, deeply segmented. Petals four, unequal. Fruit a long, 4-angled, slightly curved, erect pod one to one and one-half inches long, containing many seeds. In low grounds and often in dry soil. The genus receives its name from the Gr. *kapnodes* meaning like smoke, due to the odor of some species.

BRASSICACEAE. Mustard Family.

Bursa Bursa-pastoris (L.) Britton.

Shepherd's-Purse.

(Capsella bursa-pastoris Moench.)

This little mustard takes its name from the conspicuous little, flat, triangular 2-lobed pods that form on slender pedicels at right angles to the one to several erect stems as the plant continues to blossom. The tiny, white, inconspicuous flowers form in terminal clusters as the stems grow and continue to blossom always at the tip of the stems, until June, much like the Sweet Alyssum, "Candytuft" of our gardens to which it is related. Petals four, white, minute. Stamens six, two of which are shorter than the others. Stem leaves few, alternate, simple, with margins of the blades more or less toothed. Basal leaves in a flat rosette, the blades 2 to 4" long, narrow, larger at the tip and tapering toward the base, cut into many usually opposite, irregular pointed lobes and a larger, terminal lobe. A weed introduced from Europe. Found in lawns and city wastes. January to April. These plants sometimes blossom again in the fall. Genus name has its origin in the Lat. *bursa*, *purse*, from the shape of the pod.

Lepidium virginicum L.

Peppergrass

Plant named for its peppery buds and equally peppery, notched, flattened, tiny, scale-like seed cases. Flowers tiny, inconspicuous similar to Shepherd's Purse and only at the tip of the ever lengthening flower stalks. Leaves largely basal forming a flat rosette of divided or toothed blades. Stem leaves narrow, toothed. One of our commonest weeds.

Lepidium austrinum Small.

Peppergrass.

Differs from *Lepidium virginicum* in the stem leaves being spatulate or oblanceolate, pedicels ascending during blossoming, spreading at maturity, finely hirsute pods and absence of petals. Genus taken from Gr. *lepidion*, small scale, from the shape of the pods.

Lesquerella recurvata (Engelm.) S. Wats. Cloth of Gold.
Bladder-pod.

This slender-stemmed, early blossoming annual springs from a cluster of root leaves, varying in shape, and has tiny, bright yellow, cruciform flowers about one-eighth inch across, that blossom up the stem tipping the ends with gold as the stem grows. Leaves simple alternate. Blades entire, one-fourth to one inch long, varying from broadly linear on the stems to wedge-shaped at the base, and covered with tiny branched hairs (use magnifying glass). Petals four, small, arranged in the form of a cross. Stamens six, four long, two short. Fruit a smooth, globular pod the size of a small pea, with a thin partition in the middle, maturing upward on the ever lengthening stem, the pedicels recurved. Flowers are wide open in full sun but close at sundown or immediately after being picked. Widespread. February, March and April.

Lesquerella polyantha (Schlecht.) Wats. Slender Bladder-pod.

Similar in general construction to *Lesquerella recurvata* given above. Plants are taller, bloom about 2 weeks later, usually when the pods are well formed on *Lesquerella recurvata*. Flowers are larger, and pedicels are ascending and do not recurve when the pods mature. Stem leaves longer, about $1\frac{1}{2}$ " long, broadly linear or oblong. Widespread.

Lesquerella grandiflora (Hook.) S. Wats. Bladder-pod.

Similar to the Bladder-pods above but stem leaves are broader, oblong or oblong-oblancoelate, $\frac{1}{2}$ to $1\frac{1}{2}$ " long, entire or wavy, sessile and somewhat clasping. Flowers larger, $\frac{3}{8}$ to $\frac{1}{2}$ " across. Petals obovate, 2 to 3 times as long as the sepals. Pods smooth, on ascending or spreading pedicels, $\frac{1}{2}$ to $\frac{5}{8}$ " long. In sandy soil. February, March and April.

Lesquerella lasiocarpa (Hook.) S. Wats. Hairy Bladder-pod.

An annual similar to the other *Lesquerellas* but stems are coarser and longer. Stem leaves usually broader, oblong, vari-

ously lobed or coarsely toothed. Pods globose but flattened, larger and densely covered with short, fine, spreading hairs. Petals without the orange at the base and broader, making the flower appear larger ($1\frac{1}{2}$ " across). Pedicels are usually more spreading and many recurve in fruit as in *Lesquerella recurvata*. March and April. In sand along railroad tracks and roadsides south of San Antonio. Genus named for Lesquereux, an American botanist.

Lesquerella engelmannii (A. Gray) S. Wats.

Erect, greyish-white leafy plant, 8 to 18" tall, much branched at the pale, thick, woody root and bearing small yellow flowers similar to *Lesquerella recurvata*, only full twice as large, ($5\frac{1}{8}$ " across) and forming a broader top. Leaf-blades narrowly oblanceolate, entire, 1 to $2\frac{1}{4}$ " long. Pods slightly larger, and bearing a style as long as the body. Plants covered with minute, scurfy scales that make it greyish all over. March to June. On dry, limestone hills and hillsides.

Radicula nasturtium-aquaticum (L) Britton and Rendle.

(*Nasturtium officinale* R. Br.)

Watercress. "Berro"

Deep green, pungent plants with floating or creeping rooting stems that spread rapidly in ditches, springs and shallow water in streams. Leaves compound, alternate. Leaflets usually three, the middle one largest and rounded. Flowers small, white, similar to the bladder-pods and peppergrass in structure. Pod about one-half inch long, strongly curved upward. Gathered for salads. May also be cooked like spinach. Spring to fall. Naturalized from Europe. Mr. G. Schmeltzer reports this is good for relieving fever.

Cheirinia arkansana (Nutt.) Rydb.

Wallflower.

(*Erysimum arkansanum* Nutt)

Tall, slender, swaying, ridged stems 1 to 3' high, topped with light orange-yellow flowers and usually growing high on ledges of limestone bluffs or on the slopes of ravines. Stems covered

with minute two to three-pronged hairs (use magnifying glass). Leaves simple, alternate. Blades linear to lanceolate, entire or sparingly toothed, one to six inches long. Flowers about $\frac{3}{4}$ " across, in rounded clusters 2 to 3" across, at the end of an ever lengthening stem. Petals four, orange-yellow, about $\frac{1}{2}$ " long, narrowed into claws at the base. Stamens six, four long, two short. Pod four-angled, narrow, slender, three to four inches long. True to the old English name, the San Antonio Wallflower likes to find foothold on high walls and ledges. March and April.

Brassica alba (L.) Boiss.

Mustard. "Mostaza"

Coarse weeds with grooved stems and rounded clusters of sulphur-yellow, 4-petaled flowers. Leaves simple, alternate, rough-veiny, one main vein at base. Blades frequently cut to the midrib, the lobes nearest the base small, the terminal large and broad. Petals 4. Calyx lobes narrow, the margins rolled back. Stamens six, 4 long, 2 short. Pods hairy, stout-beaked, erect or ascending, $\frac{1}{2}$ to $\frac{5}{8}$ " long, constricted between the seeds, and forming up the stems as the flowers mature.

Brassica juncea (L.) Cosson.

Indian Mustard.

Similar to *Brassica alba* but plant is glabrous (not hairy), pedicels slender (not stout), petals fully twice as long as the sepals, pods smooth (never hairy), slender, the beak $\frac{1}{3}$ to $\frac{1}{4}$ as long as the body. Found in oat patches and roadsides near cultivated fields.

Draba cuneifolia Nutt.

Whitlow Grass.

Draba.

Timid little white-flowered annuals blooming first of the season. Leaves simple, alternate. Blades mostly wedge-shaped, few-toothed or entire, $\frac{1}{2}$ to 1" long, 3-veined at base. Flowers small, white, in a flat-topped cluster at the end of the stem, resembling Sweet Alyssum. As the stem grows, the flowers continue to blossom and gradually become flat, oblong pods less than one-half inch in length. Flowers constructed on the plan of all mustards. Petals 4, notched, small, white. Stamens 6. In low

grounds and dry hillsides. Rarely noticed. Distinguished from *Draba platycarpa* by the very small branched hairs that cover the plant (use magnifying glass.)

Draba platycarpa Torr. & Gray. Whitlow Grass. Draba.

Similar to the preceding species but plant is hairy (but hairs are not branched), and pods are wider and shorter (6—7.5 mm). Not as common as the above species.

Arabis petiolaris A. Gray. Rock Cress.

Flowers white or deeply tinged with purple, in a loose cluster at the end of tall, simple, swaying stems that are smooth or covered with reflexed hairs. Basal leaves few, 4 to 8" long, with five to seven lobes. Stem leaves alternate, various, upper entire, lower pinnatifid or halberd-shaped. Petals four, purplish. Stamens six, two short, four long. Pod flat, erect, or ascending, 2 to 3 inches long and containing many flat seeds. March to June. Widespread. Genus is named for Arabia.

Sophia pinnata (Walt.) Britton. Tansy Mustard
(*Sisymbrium canescens* Nutt.)

Plants with small, flat-topped clusters of greenish yellow flowers, much divided, finely cut, once or twice pinnately compound leaves, and 4-sided pods about $\frac{1}{4}$ " long, that form up the stem as the plant continues to blossom. Petals 4. Stamens 6, 4 long, 2 short, exceeding the minute petals. Seed pods peppery, $\frac{1}{4}$ " long, on slender, ascending stalks $\frac{1}{4}$ to $\frac{1}{2}$ " long. Leaves 1 to 2" long, once or twice pinnately compound. Leaflets finely divided and lobed.

CAPPARIDACEAE. Caper Family.

Polanisia trachysperma Torr. & Gray. Clammy-weed.
Spider Flower.

Hairy, clammy weeds with a disagreeable odor. Leaves compound, alternate, trifoliolate. Leaflets entire, $\frac{1}{2}$ — $1\frac{1}{2}$ " long. Flowers in terminal clusters with small leaflike bracts crowded on the stem below. Sepals four. Petals four, white, broad above

and narrowed at the base. Stamens eight to thirty-two, brownish-red or purple, longer than the petals and spreading out of the flower, giving rise to one of its popular names. Fruit an erect, many-seeded, clammy-hairy pod, 1—2½" long. March to fall. The flower has an unusual appendage in the form of a red gland at the base of the petals. Genus taken from two Gr. words *polys*, many, *anisos*, unequal, from the stamens.

Pedicellaria pentaphylla (L.) Schrank.

(*Gynandropsis pentaphylla* [L.] DC.)

Branched plants 6—19" high, with 5-foliolate leaves and leafy-bracted racemes of 4-petalled white flowers. Leaves palmately-compound. Leaflets 5, rarely 3, oval to obovate, slightly and finely toothed or entire, ¾ to 2" long, and giving off a disagreeable odor when crushed. Petals 4, threadlike at the base, expanded above. Stamens 6, the filaments short at first but developing in threads about an inch long, and united below half their length. Pod erect, 1 to 2½" long, glandular, long-stalked and containing several seeds. Not common. May and June. In gardens and waste places.

CRASSULACEAE. Orpine Family.

SEDACEAE. Orpine Family. *In Small's Flora.*

Sedum nuttallianum Raf. Stonecrop. Flowering Moss.

These tiny, fleshy plants make beautiful golden patches covering almost bare, flat limestone rocks and hilltops. Stems two to four inches high, intricately branched. Leaves alternate or opposite, fleshy, almost cylindrical, about one-fourth inch long, resembling tiny pods. Flowers small, ¼" across, yellow, sessile, near the foot of the branches or in the axils of the uppermost fleshy leaves. Petals usually five, sometimes four, yellow. Stamens 10. March to July. Plants are often a source of interest as they will continue to grow and blossom even though pulled and kept out of water for fully two weeks. Genus name originated from the Lat. *sedeo*, to sit, from its habit of growing on walls and rocks.

HYDRANGEACEAE. Hydrangea family.

Philadelphus serpyllifolius Gray. Mock Orange. Wild Syringa.

A shrub that makes itself known by the lovely orange-blossom fragrance of the pure white, four to five-petaled flowers that singly tip the short, brittle branches. Leaves alternate or opposite. Blades entire, less than three-fourths of an inch long, three-nerved, green above and white with a dense covering of appressed silvery-white hairs beneath. Stamens many. Fruit a small globular capsule. Flowers about one-half inch across, similar to the familiar garden Syringa, commonly known as Mock Orange, only smaller. March and April. On shady limestone ledges. Rare.

ROSACEAE. Rose Family.

Rubus trivialis Michx.

Dewberry.

“Zarzamora”

Prickly, trailing, evergreen shrub. Leaves palmately compound, alternate. Leaflets three to five, sharply saw-toothed. Flowers white, showy, resembling miniature wild roses. Petals five. Stamens numerous. Fruit a delicious, black, juicy oblong berry gathered for food and making an excursion in April and May a pleasure delight. February to April. Shaded moist ground and dry creek beds. Commonly cultivated and very beautiful with its white flowers and scarlet and black fruits when trained over a wire netting. Mr. G. Schmeltzer reports that the dried dewberry roots are made into a tea, which is drunk for hemorrhages.

Geum canadense Jacq.
(*Geum album* Gmel.)

White Avens.

This coarse, hairy plant has a slender, branching stem that grows about one and a half feet high and grows out of a tuft of large, long-stemmed, basal leaves either three to five foliolate or deeply cut into round lobes. Stems leaves three-lobed or three-divided, the lobes irregularly saw-toothed above the middle.

Flowers small, white to greenish yellow, blackberry-like, with five widely separated petals. Stamens many, surrounding the central cluster of green pistils. Fruit bur-like clusters, radiating with hooked tips that fasten themselves firmly in one's clothing and play havoc with any perfectly good disposition. In moist, shady river bottoms and ravines. Not common.

Rosa bracteata Wendl. Wild Rose. McCartney Rose. "Rosa"

A climbing or trailing rose with large white or cream-colored flowers, $1\frac{1}{2}$ to 2" across, opening wide, with five broad petals notched at the top and a center of numerous stamens making a heart of gold in blossom. Leaves pinnately compound, alternate. Leaflets five to eleven, deep green, thick, shiny, oval or obovate, finely saw-toothed. Usually growing in thick, matted screens and climbing over fences. An exotic of Asiatic origin.

MALACEAE. Apple Family.

Crataegus mackensenii Sarg. Mackensen's Hawthorn. "Tejocote"

Small trees or shrubs armed with slender thorns and bearing flowers in snowy white clusters like apple blossoms. Leaves simple, alternate. Blades ovate to round, slightly lobed, the lobes sharply saw-toothed. Leaflike appendages (stipules) at base of the leaf stalk. Flowers on woolly pedicels. Petals 5. Stamens many. Fruit red, edible, apple-like, the size of small marbles, ripening in fall. March and April. In river bottoms. Species named for Bernard Mackensen, a Texas botanist and resident of San Antonio.

Crataegus crus-galli L. Cockspur Thorn. Hawthorn.

A small tree or shrub with blossoms and fruit like the preceding species but having more slender thorns and leaf blades that are thick, shiny, much smaller, obovate or oblanceolate, saw-toothed above the middle and without the leaflike stipules at the base of the petiole. In moist soil.

Prunus minutiflora Engelm.

Dwarf Plum.

Rigid, intricately branched, spreading shrub, up to 3' high, (usually 1½ to 2'), with very small leaves and minute solitary flowers. Leaf-blades less than ½" long, entire or with few coarse teeth, usually larger above the middle, clustered on short branches. Fruits similar to our orchard plum, but smaller (3/16 to ½" long) and having a velvety skin. Blossoms in February and March. Plums are ripe in April and May.

Prunus Tarda Sarg.

Wild Plum.

Large shrub or tree with clusters of fragrant white blossoms appearing before the leaves at the ends of short, grey, smooth branchlets. Leaf-blades oblong to obovate, 1½ to 3" long, finely saw-toothed, smooth above, finely haired on the midrib and its branches. Flowers ½—¾" across, 2 or 3 together. Pedicels smooth, ¾" or less long. Calyx lobes hairy on both sides. Petals 5, white. Stamens numerous. Fruit a yellow, purple, red, blue or black plum, ½" or less long, almost globular, covered with a bloom and containing a flattened stone rounded at the base. Ripe in May or June. Common in ravines. February and early March.

Prunus glandulosa Hook.

Low, branched, somewhat thorny shrub, with zigzag branches and white 5-petaled flowers similar to those of *Prunus tarda* described above. Leaves simple, alternate. Blades ½ to 1" long, oblong to oblong-elliptic, finely saw-toothed with glandular-tipped teeth. Petioles short. Flowers usually in twos, sometimes solitary. Pedicels less than 1" long. Sepals conspicuously glandular-toothed. Fruits velvety-skinned, yellow, rather tasteless, coarse-grained. Plums ripe in April and May. Not common.

MIMOSACEAE. Mimosa Family.

Acacia roemeriana Schlecht.

Devil's Claws.

Round-flowered Catsclaw.

Shrub armed with stout, recurved prickles and bearing

flowers that look like little balls of white fuzz. Leaves twice compound, with 2 to 6 divisions and with 4 to 8 pairs of small, oblique leaflets on each side of the divisions (usually only 1 pair). Flowers in globular heads the size of small marbles. Pods flat, two to five inches long and about one inch broad. March and April. On limestone hills and rocky hillsides. Thickets of this shrub are almost impenetrable to man and larger animals.

Acacia greggii A. Gray.

Long-flowered Catsclaw.
Devil's Claws.

Shrub armed with short, recurved spines similar to the round-flowered catsclaw but having white flowers in compact oblong clusters, 1 to 1½" long. Leaves twice compound, the two to six divisions having 4 to 7 pairs of small, entire, oblique leaflets on each division. Pods similar to round-flowered catsclaw but only one-half inch wide and more irregularly constricted between the seeds. March and April. In dry soil, usually sandy loam. Leaflets fold together in pairs when disturbed.

Acacia amentacea DC.

Black-brush.

Catsclaw.

White flowering shrub with straight thorns in pairs along the zigzag branches. Leaves twice compound, each of the two divisions bearing four to eight small, firm, oblique leaflets. Flowers white, turning yellow with age, in oblong clusters about one inch long. Pod narrow, curved, somewhat flat, two to four inches long, constricted between the seeds and usually reddish-brown when ripe. March and April. In dry, sandy soil south of San Antonio.

Acacia filicioides (Cav.) Trelease.

Thornless Acacia.

(*Acacia filicina* Willd.)

"Huajillo".

Thornless shrub (usually herbaceous with only a shrubby base) with large feathery, fernlike foliage and white, fuzzy flower balls the size of marbles. Leaves twice compound, each of the eight to thirty divisions having forty to one hundred small,

narrow, leaflets. Flowers solitary on short axillary pedicels $\frac{1}{2}$ to 1" long, 1 to 4 in each of the upper leaf axils and similar to the other mimosas. Stamens numerous, white, in bunches that are gathered in rounded clusters the size of marbles. Pods flat, one to two inches long, one-fourth to one-half inch broad. April to July. Widespread, but not common.

Acacia berlandieri Benth.

Acacia "Huajillo"

Similar to *Acacia filicioides* but plants are shrubby and 2—10' high, branches ashy due to numerous short, white hairs, leaflets generally even more numerous and oblique, pods longer (four to six inches) and wider (one-half to three-fourths inch). In dry sandy soil south of San Antonio. March and April.

Calliandra eriophylla Benth.

Fairy Dusters.

An odd little shrub about a foot tall with few light gray spreading branches toward the ends of which are reddish or purplish flowers that are mostly tufts of long stamens and look like fuzzy pink balls. Leaves twice-pinnately compound with six to twelve pairs of tiny leaflets on each of the two to eight divisions. Some of these shrubs bloom when only a few inches high. On limestone hills. Rare.

Acacia farnesiana (L.) Willd.

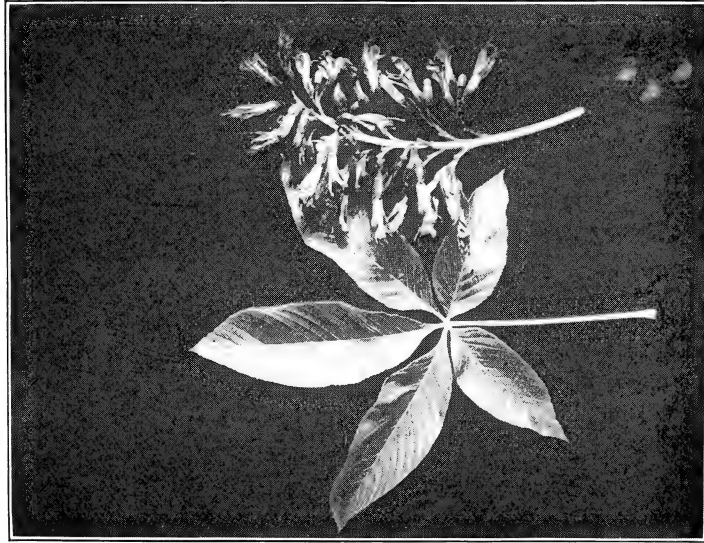
Huisache.

Opopanax.

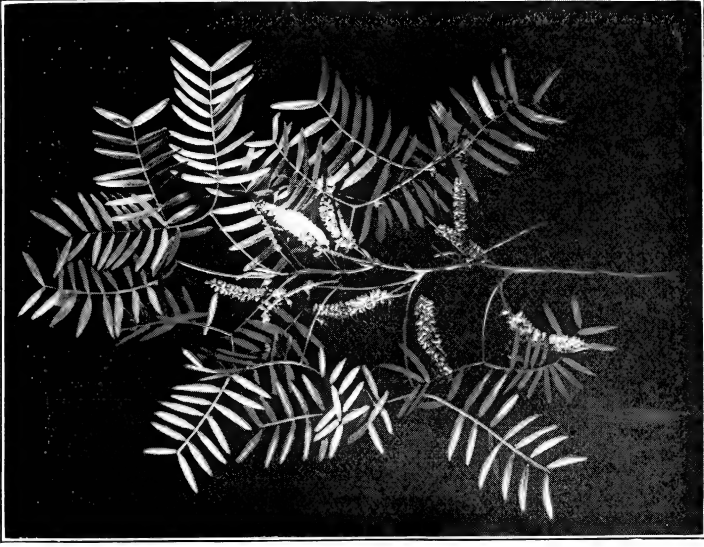
(*Vachellia farnesiana* [L.] Wight & Arn.)

"Huizache".

The Huisache is one of San Antonio's most characteristic plants. This small tree or shrub usually has several stems branching from the same root and numerous drooping branches bearing a pair of straight thorns at each node. Leaves small, feathery, 1 to 2" long, twice compound, each of the eight to sixteen divisions having ten to twenty pairs of minute, sensitive leaflets. Flowers very fragrant, yellow, fluffy balls, the size of small marbles and consisting largely of many clusters of yellow stamens. Pods cylindrical, one and one-half to three inches long.



Wild buckeye (*Aesculus octandra*), related to and having blossoms as extravagant as the popular horse-chestnuts of the north and east. Found along the creek and river banks and in low, rich bottoms. (Courtesy of B. C. Tharp).



Mesquite (*Prosopis juliflora*), our commonest drought enduring tree. The blossoms are one of the chief sources of honey in the state, and ripe pods form nutritious food for horses and cattle in drought seasons. (Courtesy B. C. Tharp).

This is a moisture loving plant, and grows thickly around lakes and "tanks" and drainage ditches. Occasionally found in "cut over" open country where the majority of the mesquites have been removed. An interesting account of the habits of this tree may be found in Mackensen's Trees and Shrubs of San Antonio and Vicinity. Quoting the Beeville Bee:

"The Huisache is said to have first been brought into San Patricio from Mexico by one of the Mexican commissioners sent to represent the government of that colony. He planted them on his premises and from these trees have sprung all the huisaches now growing in southwest Texas". There seems to be no evidence to prompt a botanist to support this view. This shrub is much cultivated in France for making perfume.

Acuan velutinum (Scheele) Kuntze.
(*Desmanthus velutinus* Scheele.)

A thornless somewhat shrubby plant 1 to 2' high with feathery foliage, whitish flowers, and stems branching from the same root. Leaves twice compound, each of the four to twelve divisions bearing numerous minute leaflets. Flowers whitish, globular balls near the ends of the branches. Pods smooth, straight, narrow, one to two and one-half inches long, in radiating clusters of three to five. March to June. On dry rocky hill-sides.

Morongia roemeriana (Scheele) Heller. Sensitive Briar.
"Ten vergüenza".

A pretty, little briar with small balls of fluffy, deep pink to rose-colored, fragrant flowers. The long spreading branches are armed with recurved prickles and creep on the ground and over rocks and weeds. Leaves twice compound, each of the four to eight divisions bearing numerous tiny, sensitive leaflets. Pods somewhat flattened, four-sided, prickly, less than two inches long.

Morongia angustata (Torr. & Gray) Britton. Sensitive Briar.
(*Schrankia angustata* Torr. & Gray) "Ten vergüenza".

Similar to *Morongia roemeriana* but mature pods are over two inches long and leaves have six to sixteen divisions instead of four to eight. Named for Schrank, a German botanist.

Mimosa fragrans A. Gray. Pink Mimosa. Sensitive Shrub.

A prickly, much branched shrub with lovely rose-colored fuzzy balls of bloom, similar in size to the blossoms of huisache. Leaves twice compound, each of the two to six divisions bearing ten to sixteen small, entire, sensitive leaflets. Pods curved, one to two and one-half inches long, with constrictions between the three to eight seeds, the margins rarely armed with stout prickles. March and April. Usually on lower ledges of limestone bluffs.

Prosopis juliflora (Swartz) DC. Mesquite "Mezquite"

San Antonio's commonest tree. It usually has one main trunk and a fairly broad and usually open crown. Branches armed with straight spines. Leaves feathery, drooping, twice compound, each of the two (rarely 4) divisions bearing ten to sixteen pairs of narrow, entire leaflets about one inch long. Flowers in cylindrical spikes, one and one-half to three inches long, white turning yellowish with age. Pods variously colored, nearly straight or curved, narrow, somewhat flattened, four to twelve inches long, containing oblong seeds and hanging in clusters from the tips of the main branches or the numerous twigs. March and April and again in June and July. Pods form nutritious food for stock.

Mexican children often eat the pods, which are sweet. They used to be an important food of the Indians.

CAESALPINACEAE. Senna Family.

CASSIACEAE. Senna Family. In *Small's Flora*.

Cercis occidentalis Torr. Red-bud. Judas-tree.

Shrubs of limestone ledges and rocky hillsides, glowing with

purplish-red or rose-colored bloom early in February and March. Leaves simple, alternate. Blades large, thick, smooth, shiny, rounded, 1 to $3\frac{1}{2}$ " across. Flowers bonnet-shaped, in clusters all along the old wood, and appearing before the leaves. Corolla rose pink, the 3 upper petals erect and spreading, the two lower folded together enclosing the stamens and pistil. Calyx purplish-red (Bordeaux red in Ridgeway's Color Chart). Pods flat, 2 to $3\frac{1}{2}$ " long, narrowed at both ends, usually purplish or dark red. Ledges of limestone bluffs, on rocky hillsides and in shaded canyons. February and March.

Cassia roemeriana Scheele.

Two-leaved Senna.

An odd-leaved, bright yellow-flowered plant one to two feet tall, usually several stems coming from the same thick root. Leaves pinnately compound, consisting of one pair of unequally-sided leaflets. Flowers yellow, 2 to 6 on short peduncles in the axils of the upper leaves. Petals five, unequal, usually conspicuously marked with brown veins. Stamens ten, unequal and with curved anthers. Pods nearly straight, about one inch long. March to June. Usually on poor, dry soil.

Cassia pumilio A. Gray

Dwarf Senna.

Low plant, 2—4" high, with compound leaves of 2 narrow, entire, unequal-sided leaflets and solitary, yellow, 5-petaled flowers ($\frac{1}{2}$ — $\frac{3}{4}$ " across) on slender axillary pedicels. Petals 5, yellow, conspicuously veined with deeper yellow or brown. Stamens 5 to 10, unequal, the anthers usually brown and curved at their tips. Often 3 stamens are sterile and reduced to 3 short, flattened yellow filaments. March, April and May. Not common.

Cassia lindheimeriana Scheele.

Velvet-leaved Senna.

Velvety-leaved bushy plants, 1 to 3' high, with several stems coming from the same root and bearing clusters of yellow flowers. Leaves pinnately compound. Leaflets, eight to twelve, elliptical, unequal-sided, velvety and covered with shining, silky, appressed

hairs. Flowers as in *Cassia* given above. Pods flat, almost straight, sparsely hairy, about two inches long. Usually on poor, dry hillsides and rich ledges of limestone rocks. May to fall.

Chamaecrista cinerea (C. & S.) Pollard.

Sensitive Pea.

Partridge Pea.

Plant with orange-yellow, 5-petaled flowers, flat pods about 2" long, once-pinnately compound leaves, and erect or spreading stems branching from a woody base. Leaves once-pinnately compound, about 1" long, nearly as broad, consisting of 10 to 20 pairs of sensitive leaflets. Leaflets narrow, about $\frac{3}{8}$ " long, somewhat sickle-shaped, and having a minute reddish, cup-shaped gland below the lowest pair. Flowers about 1" across, orange-yellow, solitary on slender axillary pedicels, 1 to $1\frac{1}{2}$ " long. Stamens 10, unequal. Pods flat, 1 to 2" long and slightly over $\frac{1}{8}$ " wide. March to June. In sandy soil.

Parkinsonia aculeata L.

"Retama."

Parkinsonia.

Noticeable, bright-flowered, high shrub or small tree with spiny green-stemmed branches and drooping feathery foliage. Leaves pinnately compound, with a long flattened axis edged with tiny, flat leaflets that soon fall off. Flowers yellow, in elongated, drooping clusters. Petals five, yellow, one with red dots at base and turning orange with age. Stamens ten. Pods narrow, two to four inches long, constricted between the seeds and hanging from the younger branches and twigs. This plant has the peculiar habit of blossoming at intervals following heavy rains. Prefers moist situations, noticeably banks of streams. It is introduced here, probably.

KRAMERIACEAE. Krameria Family.

Krameria secundiflora DC.

Krameria.

Sandbur.

Odd, wine-red or reddish purple, star-pointed flowers running over stony hillsides. The silky, hairy prostrate stems branch

radially from the thick, tough, main root. Leaves simple, alternate. Blades narrow, about one inch long, densely covered with silky hairs. Flowers Bordeaux-purple, irregular, odd, $\frac{1}{2}$ to $\frac{3}{4}$ " across, on short 2-leaved, hairy peduncles in the axils of the many alternate leaves. Sepals 5, hairy underneath, usually mistaken for petals because of their red color. Petals odd, smaller than the red sepals, the upper 3 united into a 3-lobed fanshaped object, the other 2 short, broad, thick, one on each side of the furry pistil. Stamens four, inconspicuous, united at their bases. Pistil conspicuously furry at base. Fruit hard, one-seeded, covered with spines that have sharp recurved barbs at the tip, giving rise to the common name sandbur. March to July.

FABACEAE. Pea Family.

Sophora secundiflora (Ortega) DC.

Mountain Laurel.
"Frijolito."

Evergreen shrub or small tree with fragrant, bonnet-shaped, violet-colored flowers in big clusters in early spring. Leaves pinnately compound. Leaflets seven to thirteen, rounded or notched at the tip, leathery, deep-green, smooth and shiny. Fruit a big woody pod, containing three to four coral-red seeds. February and March and rarely again in November. On limestone hills.

The beans are reported as being poisonous. W. E. Safford writes the following in his report on Narcotic Plants and Stimulants. "The beans have been studied chemically and are known to contain a narcotic, poisonous alkaloid allied to cystin, having a physiological effect very much like that of tobacco. From Texas, reports have been received that the seeds have poisoned children. The plant, though usually avoided by animals, is eaten by deer and goats, and the hard, glossy beans when swallowed whole are apparently harmless. In early days they were much used by certain tribes of Indians for making a narcotic decoction, and when ground to a powder were put in mescal or Agave

brandy, to make it more intoxicating: hence the name "mescal beans" which was formerly applied to them."

"In early days these beans were so highly valued by the Indians of the Mexican border region that a string of them 6 feet long would be accepted in barter for a pony. According to Dr. Rothrock, who quotes Mr. Bellanger of Texas, "The Indians near San Antonio used this bean as an intoxicant, half a bean producing a delirious exhilaration followed by a sleep that lasts two or three days: and it is asserted that a whole bean would kill a man."

The showy flowers are beautiful for decorating but are seldom used as the heavy perfume produces headache and sometimes nausea.

Sophora affinis Torr & Gray.

Sophora.

A shrub with long, drooping clusters of bonnet-shaped flowers changing shades of pink and magenta. Leaves pinnately compound, alternate. Leaflets 13 to 15. Fruit a conspicuously beaded black pod with constriction between the seeds. Not common.

Lupinus texensis Hook. Texas Blue-bonnet. Buffalo Clover.
Lupine.

This is the Texas State flower. Plants with palmately compound leaves and elongated clusters of blue bonnet-shaped flowers, each with a white or red blotch on the upper petal. Leaflets 5 to 7, narrowed at each end. Flowers bonnet-shaped, purplish-blue, rarely white, in few elongated, erect clusters. Petals five, upper petal marked with a white blotch that turns red with age. Pods erect, copiously silky-hairy, 1 to 1½" long, forming up the stem as the flowers continue to blossom. The blue-bonnets grow singly or in patches often covering areas of an acre or more. Prefers well drained rocky hillsides. The roots of these plants are of interest through the nodules that form and gather nitrogen from the air in the soil. This is apparently the favorite flower of all Texans.

Medicago sativa L.

Alfalfa.

This purple flowered "clover" is grown extensively for fodder and has escaped from cultivation. Leaves trifoliate, the three oblong, blunt tipped leaflets terminating short stalks that expand at the base forming membraneous sheaths around the nodes. Flowers tiny, bonnet-shaped, purple, in dense clusters of 15 to 20, terminating long, slender stems that branch out of the axils of the leaves. Seed pods curiously twisted into spirals. An excellent forage crop and relished by horses and cattle. April to late summer. Introduced plants when found have escaped cultivation.

Melilotus alba Desv.

White Sweet Clover.

"Trebol".

Tall, slender, branched plants with rather inconspicuous slender spikes, 2 to 10" long, of tiny, white, bonnet-shaped blossoms that are hung with a cloud of perfume that is one of the sweetest breaths of summer. Plants similar to yellow sweet clover, with short-stemmed, trifoliate leaves and long-oblong leaflets with toothed margins. Pods tiny, oval. Rare, probably introduced. March to July. A valuable source of honey in many Northern and Eastern localities. Most of the odor comes from the leaves and stems.

Melilotus indica (L.) All.

Yellow Sweet Clover.

Plants similar to Alfalfa but with slender spikes of minute, bonnet-shaped, very fragrant, yellow flowers and small, wrinkled, ovoid, 1 to 2-seeded pods. Introduced. March to July. A vacant lot and wayside weed. Not relished by horses and cattle probably because of the bitter taste of the plant. The seed is a common adulterant of alfalfa seed.

Indigofera leptosepala Nutt.

Indigo-plant.

Scarlet-flowered plant with spreading prostrate stems. Leaves pinnately compound. Leaflets 7 to 9, covered with fine, appressed hairs. Flowers bonnet-shaped, geranium pink to pale scarlet, in elongated axillary clusters. Pods straight, thick,

angled, several-seeded, slightly over 1 inch long. March to July. Frequently threading the grass of large lawns and pastures, on well-drained, gravelly hillsides.

Cracca lindheimeri (A. Gray) Kuntze. Cat-gut. Goat's Rue.
Scarlet Pea.

Spreading plant with stout stems, pale white-margined leaflets, and bright scarlet to reddish-purple flowers resembling sweet peas. Leaves once-pinnately compound. Leaflets 9-17, oblong to rounded in outline, $\frac{1}{2}$ to $1\frac{1}{4}$ " long, entire, covered with appressed hairs underneath, and conspicuously white margined. Flowers in twos or threes at intervals on the long stems that branch out of the stem opposite the alternate leaves. Pods 1 to $1\frac{1}{2}$ " long, flat, velvety, yellowish. April to fall. In sandy soil.

Sesbania macrocarpa Muhl.

Tall, widely branched, green-stemmed plants with long, feathery leaves and drooping clusters of yellow, bonnet-shaped flowers and long, slender pods. Leaves pinnately-compound, 4 to 16 inches long, alternate. Leaflets 15 to 50 pairs, oblong, $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, mucronate-tipped. Flowers flattened, pea-shaped, with a brownish-yellow broad petal folded over the lateral yellow ones, and the two lower petals united forming a purplish or red-tipped keel. Pods slender, 6 to 10 inches long, drooping. July to fall. Growing close to "tanks" and streams. Distinguished from the Rattlebush (*Daubentonia longifolia*) by the more numerous leaflets, flowers not a clear yellow, and pods longer, more slender and not winged.

Daubentonia longifolia (Cav.) DC. Rattle-box. Rattle-bush.

Water-loving shrub with a decidedly disagreeable odor and hanging clusters of bright, yellow, bonnet-shaped, showy flowers. Leaves pinnately compound, alternate. Leaflets 12 to 60. Pods 4-sided, 4-winged, 2 to 3 inches long. Along banks of ditches, creeks and lakes, often thriving for years in water knee deep.

May to November. The poisonous seeds when eaten in quantities of more than an ounce produce harmful effects on sheep and goats, often causing death.

Astragalus mexicanus A. DC. Ground Plum. Buffalo Weed.
(*Geoprumnon mexicanum* [A. DC.] Rydb.)

Plant with short stems spreading on the ground and springing from a thick, woody perennial root. Leaves pinnately compound. Leaflets 17 to 33, usually oblong and hairy on the margin and under surface. Flowers bonnet-shaped, about 1 inch long, whitish or cream-colored tinged with blue or violet, and in clusters of 9 to 15 on long flower stalks that come out of the axils of the leaves. Calyx very hairy, 5-toothed. Pods fleshy, the shape of plums, smooth, purplish, about one inch long, 2-celled, with thick fleshy walls, and many seeds united to the partition walls. February and March. In poor, dry, packed soil

Astragalus nuttallianus DC. Milk-vetch
(*Hamosa nuttalliana* [DC.] Rydb.)

Slender-stemmed, sparingly hairy plants, 6 to 18 inches high, with some weak spreading stems and close clusters of tiny, violet, bonnet-shaped flowers at the end of long, axillary stalks. Leaves pinnately compound. Leaflets 11 to 17 (sometimes more), small, rounded or notched at the tip. Flowers in close clusters of 5 or 6 (sometimes fewer), violet turning purple with age, and with a white spot at the base of the upper petal. Pods smooth, slightly curved, about $\frac{3}{4}$ " long, black, grooved on one side. February to June. Commonly mistaken for the true vetch. This plant has no tendrils. Widespread. Very common in waste places.

Astragalus wrightii A. Gray. Hairy Milk-vetch.

Similar to *Astragalus nuttallianus* but very hairy, more erect, seldom as large, leaflets fewer (7 to 11, often 15), flowers in dense hairy heads, and pods much shorter, straight and very hairy. March to May.

Astragalus austrinus (Small).

(*Hamosa austrina* Small.)

Similar to *Astragalus nuttallianus* but leaflets mostly 9 to 11, elliptical, narrowed at each end (never notched), stems hairy, more slender. Pods hairy (never smooth), smaller, narrower, strongly curved at base. Flowers slightly larger. Not as common.

Psoralea hypogaea Nutt.

Indian bread-root.

Low hairy plants with palmately compound leaves of 5 gland-dotted leaflets and globular heads of violet, bonnet-shaped flowers all tufted at the top of a thick globular sometimes oblong root. Leaf-blades on long hairy petioles that come out of the stem close to the ground. Flowers bonnet-shaped, violet or white tinged with blue, in compact globose clusters at the end of hairy stalks as long or longer than the leaf-stalks. Calyx 5-lobed, very hairy. Corolla about $\frac{1}{2}$ " long. Pods 1-seeded, smooth below, but ending in a slender, hairy beak. Poor, dry, well drained limestone hillsides. March and April. Roots were used for food by Indians.

Psoralea cuspidata Pursh.

Similar to *Psoralea hypogaea* but plant is taller (12 to 18") and more branched. Racemes on stout peduncles. Calyx becomes inflated with age, developing a shallow pouch on the upper side. Corolla longer (nearly $\frac{3}{4}$ " long), instead of less than $\frac{1}{2}$ ".

Psoralea cyphocalyx A. Gray.

Wand Psoralea.

Flowers similar to *Psoralea cuspidata* but this plant has wand-like, often purplish stems, 1 to 2½' tall, is few-leaved and has 3 leaflets above, and 4 or 5 below. Blossoms later. April, May and June. Usually dry, rocky hillsides.

Psoralea floribunda Nutt.

Wild Alfalfa.

A bushy plant, 1 to 2' tall, with small gland-dotted leaflets, $\frac{1}{2}$ to $1\frac{1}{2}$ " long, and many tiny, bluish-purple, bonnet-shaped

flowers on long, slender, leafless axillary stalks. Leaves palmately compound. Upper leaflets 3, lower 4 or 5. Corolla $\frac{1}{8}$ " or less long. Pods small, short, 1 to 2-seeded, densely dotted with black glands. April to July. Often mistaken for Alfalfa.

Psoralea rhombifolia Torr. & Gray. Brown-flowered Psoralea.

Curious plant with spreading, vine-like stems and small clusters of about 6 small, morocco-red or reddish-brown, bonnet-shaped flowers, terminating long axillary stalks. Leaves compound, alternate. Leaflets 3, ovate to rhombic or rounded, entire. Pods short, hairy, 1-seeded, less than $\frac{1}{2}$ inch long. Spring and summer. Widespread. Genus receives its name from Gr. psoraleos, scabby, from the dots on the leaves.

Eysenhardtia amorphoides H. B. K.

Rock-brush.

Shrubs with fragrant white flowers and a disagreeable odor in leaves, branches and stems. Leaves pinnately compound. Leaflets 11 to 31, small, gland-dotted. Flowers white, bonnet-shaped, very small, thickly set around the tips of the many branches. Pods erect, slightly curved, less than one inch long. March to November.

Parosela aurea (Nutt.) Britton. Golden Dalea. Pussy-foot Dalea.

Pale, swaying, wand-like stems tipped with thick, furry, silky gray spikes, $\frac{1}{2}$ to 3" long, ornamented with a circle of tiny, yellow flowers near the tip. Leaves compound, 1 to 2" long. Leaflets 5 to 9, oblong to oblanceolate, pale, small, covered with appressed hairs underneath. The yellow corollas set in densely silky-haired calyxes make the cylindrical spikes soft as pussy fur. Upper petal short. Lower two petals forming the keel long, a characteristic of all Paroselas. Pods tiny, containing one to two seeds and almost hidden in the numerous fuzzy calyx cups. May to fall. On the chalk hills of the Edwards Plateau.

Parosela pogonathera (A. Gray) Vail.

Purple Dalea.

Low branching plants sprinkled with small, silky-haired spikes of dainty violet flowers. Leaves compound. Leaflets 5 to

11, small, dotted with glands. Flowers violet, small, bonnet-shaped, in compact furry, oblong to cylindrical spikes tipping the many short branches. Stamens 9 or 10. Pods tiny, one or two-seeded, hidden in the numerous furry calyx cups. Spring and summer. Usually on limestone hillsides.

Parosela frutescens (A. Gray) Vail.
(*Dalea frutescens* A. Gray)

Shrubby Dalea.

A very much-branched, low, shrubby plant sprinkled with short, terminal spikes or clusters of deep pink, rose or rose-purple flowers similar to the Purple Dalea above. Leaves pinnately-compound, about an inch long. Leaflets very small, above $\frac{1}{8}$ " long, 13 to 17, dotted with glands on the under side. Petals 5, unequal. Upper petal small, pale, almost white. Other 4 petals, bright purple and longer. Calyx deeply ridged, dotted with large amber-colored glands, and not furry. Pods tiny, 1 or 2-seeded. June to November. Limestone slopes and hills. Named for Dale, an English botanist.

Petalostemon multiflorus Nutt.

White Prairie Clover.

Late blossoming, leafy plants 12-18" high, with several slender stems coming from a common tough, woody root and having wide-angled, or ascending leafy branches each tipped with a white, globular flower cluster the size of a marble. Leaves compound, $\frac{1}{2}$ — $1\frac{1}{2}$ " long. Leaflets 3 to 9, $\frac{1}{4}$ — $\frac{1}{2}$ " long, linear to spatulate, dotted with glands underneath. Stamens 5. (Daleas have 10). Pods tiny 1 to 2-seeded, inconspicuous. June to October. Chalk hills of the Edwards Plateau.

Petalostemon stanfieldii Small.

Prairie Clover.

Tall, finely-leaved plants with rosy-violet, cone-shaped, oblong or cylindrical heads or spikes of small blossoms swaying on the long, naked ends of the several slender-stemmed, leafy, ascending branches. Leaves pinnately compound. Leaflets 3 to 7, very narrow, with margins rolled inward and dotted with minute glands underneath. Stamens 5. Pods tiny, 1 or 2-seeded,

packed tightly in the cylindrical spikes. Petals 5, violet. April and May. On the limestone hills and slopes. Differs from *Petalostemon pubescens* in being covered with few, short, silky hairs. Species named for S. W. Stanfield a Texas botanist and resident of San Marcos.

Petalostemon pubescens (A. Gray) Heller. Prairie Clover.

Similar to *Petalostemon stanfieldii* but plant is glaucous and calyx glabrate.

Petalostemon emarginatus Torr. & Gray. Prairie Clover.

Plant similar to the above species but having silky, furry heads ($\frac{1}{4}$ to 1" long), and leaflets more numerous (13 to 19), wedge-shaped and notched at their tips. Flowers purple. March and April. In sandy soil. Usually seen south of the city.

Petalostemon obovatus Torr. & Gray. Pussy-Foot.

Pale, leafy plants, 1 to 2' tall, with soft silky foliage and thick silky spikes of inconspicuous yellow flowers. Leaves alternate, once-pinnately compound, 1 to 2" long. Leaflets 5 to 9, the blades soft and densely covered with pale silky hairs, about $\frac{3}{8}$ " long. Spikes cylindrical, 2 to 4" long, thick (about $\frac{1}{2}$ "), the pointed silky bracts more conspicuous than the small yellowish petals. Stamens 5. May, June and July. In sandy soil.

Meibomia wrightii (A. Gray) Kuntze. Tick-trefoil. Stick-tight.

Perennials 1 to 2' high, with erect stems, alternate, oblong-ovate leaves, 1 to 2" long, conspicuously folded against the stem, small, inconspicuous, purplish, bonnet-shaped flowers, blossoming singly at intervals along the naked ends of the branches, and followed by flat pods, that are contracted between the seeds, and fall apart at these constrictions when mature into 1-seeded (usually triangular) joints. Leaves given as compound but consisting only of 1 blade similar to an ordinary simple leaf. Pod 3 to 5 jointed. Not common. March to June.

Meibomia paniculata (L.) Kuntze.

Plants with trifoliolate leaves, small blue or violet, bonnet-shaped flowers, followed by flat pods, $\frac{1}{2}$ to $1\frac{1}{2}$ " long, and consisting of 2 to 7 triangular divisions called "joints". Leaves compound. Leaflets 3, 1 to 2" long, oblong-lanceolate to oval, glabrous or with few minute hairs, paler beneath. Flowers small, blue to violet, in loose elongated clusters, 2 to 8" long, at the ends of the one to several erect or reclining branches. This genus is easily distinguished from all other genera by the oddly constricted, perfectly flat pods. Summer and fall. In shaded bottoms and along creek beds.

Lespedeza prairea (Mack. & Bush) Britton. Bush Clover.

Plants with long, slender, trailing, vine-like branches that come from the same root. Leaves trifoliolate. Leaflets 3, one-half to one inch long, oval or elliptic, firm, prominently veined, obtuse or retuse at the apex, deep green above, pale below. Flowers small, bonnet-shaped, bright purple, in pairs at intervals along thread like axillary stalks which are longer than the subtending leaves. Pods flat, oval, 1-seeded, veiny, less than $\frac{1}{4}$ inch long. June to November. Prefers limestone hills and hillsides.

Dolicholus minimus (L.) Medic.

Slender trailing vines with trifoliolate leaves, and tiny, yellow, bonnet-shaped flowers scattered along slender axillary flower stalks. Leaves compound. Leaflets 3, rhombic-ovate, $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, blunt-tipped, dotted with minute glands on the under surface. Pods $\frac{1}{2}$ to 1" long, curved, usually turned upward, and usually containing 2 small, bean-shaped seeds. May to November. Poor, dry soil, frequently gravel. Not common.

Dolicholus americanus (Mill.) Vail. Yellow Pea.
(*Rhynchosia menispermoides* DC.)

Broad-leaved perennial with long, slender, trailing, vinelike stems, kidney-shaped, rough veiny leaves, and clusters of 1 to 3

yellow bonnet-shaped flowers in the axils of the leaves. Leaves compound (consisting of one leaflet), alternate. Blades broader than long (1 to $2\frac{1}{4}$ " broad, 1 to $1\frac{1}{2}$ " long), rough veiny beneath, velvety above, heart-shaped at base. Pods short, flat, 1 to 2-seeded. Sandy soil. April and May.

Dolicholus texensis (Torr. & Gray) Vail.

Plant with many spreading vine-like branches, 1 to 3' long, lying on the ground, trifoliate leaves, and small, yellow bonnet-shaped flowers followed by small usually 2-seeded pods about $\frac{1}{2}$ " long. Leaflets 3, the blades $\frac{1}{2}$ to 1" long, leathery, oblong, lanceolate or ovate, entire, veiny underneath. Flowers small, yellow, solitary or 2 to 4 together in the axils of the upper leaves. Pods flat, reticulated, veiny, sickle-shaped, usually 2-seeded, and resembling small pods of "culled" beans. May to fall. Plants are common but not showy. In dry soil.

Strophostyles helvola (L.) Ell.
(*Phaseolus helvolus* L.)

Wild Bean.

Rank growing, twining vines with trifoliate leaves, purplish flowers similar to those of the cultivated bean, and pods 2 to 4 inches long strongly resembling string beans. Leaflets rhombic-oval, usually three-lobed, the lobes mucronate-tipped. Moist wastes. Summer and fall.

Strophostyles pauciflora (Benth.) Wats.

Annuals with slender, spreading, trailing or twining branches, trifoliate leaves, and small, pale purple, bonnet-shaped flowers followed by pods $\frac{3}{4}$ — $1\frac{1}{2}$ " long. Leaflets 3, the blades lanceolate, rarely broadly linear, $\frac{1}{2}$ — $1\frac{1}{2}$ " long, entire (rarely lobed). Flowers small, few at the ends of slender, threadlike, axillary peduncles longer than the sub-tending leaves. Pods 3 to 5 seeded, $\frac{3}{4}$ to $1\frac{1}{2}$ " long, strongly resembling a small, short string bean. April to July. Banks of streams. Not common.

Vicia leavenworthii Torr. & Gray. Vetch. Pea Vine.

Vines climbing by tendrils. Leaves once pinnately compound with a forked tendril at end. Leaflets 10 to 14. Flowers small, bonnet-shaped, delicate purple or lavender, in loose clusters of 3 to 8 at the ends of long, slender axillary stalks. Upper petal pale blue marked with darker veins. Lateral petals white, 2 inner petals short and united so as to inclose the stamens and pistil. Pods 6 or 7-seeded, flat, less than 1 inch long. February to July. This little vine enriches the soil wherever it takes root, through the nitrogen-gathering bacteria that make their home in little nodules on the roots. Widespread, growing equally well on rocky ravines and rich creek bottoms.

Vicia texana (Torr. & Gray) Small.

Plant similar to *Vicia leavenworthii* but the plant is much larger in every way. Stems angled and grooved. Leaflets 8 to 16, larger, over $\frac{1}{2}$ " long (usually an inch), flowers larger ($\frac{1}{2}$ " long or nearly so, always over $\frac{1}{4}$ ").

Lathyrus pusillus Ell.

Vetchling

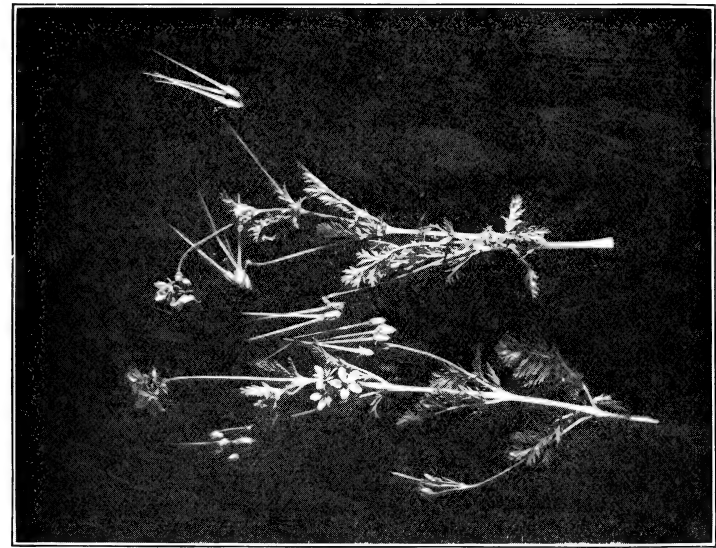
A low-growing annual with flattened, 2-winged stems and alternate, pinnately compound leaves ending in a tendril and with 2 leaflike stipules at the base. Leaflets 2, opposite each other, 3-veined, $\frac{1}{2}$ to 2" long. Flowers small, pea-shaped, violet, 1 or 2 at the ends of axillary peduncles. Pods flat, $\frac{1}{2}$ to $1\frac{1}{2}$ " long. Rare. March and April.

Zornia bracteata (Walt.) Gmel.

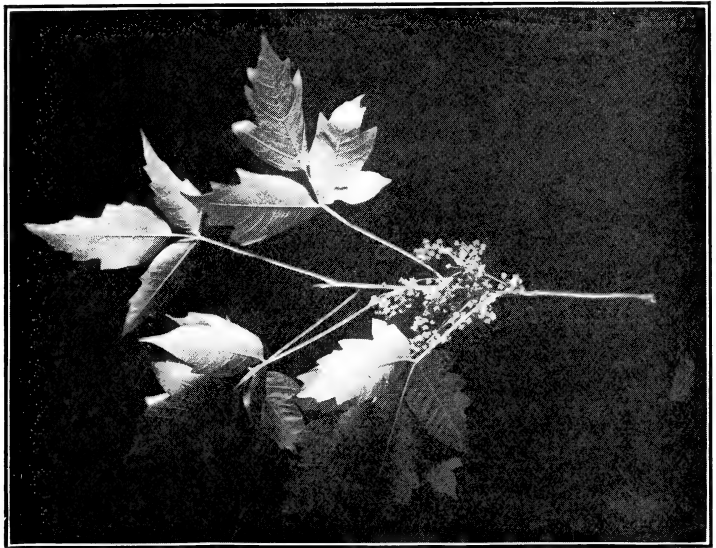
Zornia.

(*Zornia tetraphylla* Michx.)

Perennial with long, slender, branched, spreading stems, 1 to 3' long, 4-foliate leaves, and yellow, bonnet-shaped flowers. Leaves palmately compound. Leaflets usually 4, entire, finely gland-dotted, elliptic, lanceolate or linear. Flowers yellow, 3 to 9, in axillary conspicuously bracted racemes. Bracts leaf-like, about $\frac{3}{8}$ " long, elliptic or oval, folded against each other in pairs.



Pin clover (*Erodium cicutarium*), a nutritious and fattening forage for cattle in some counties. (Courtesy of B. C. Tharp).



Poison ivy (*Rhus radicans*), often confused with virginia creeper, but easily distinguished from it by the 3-foliate leaves. Virginia creeper has 5 or 7 leaflets. (Courtesy B. C. Tharp).

Stamens 10, the filaments united into a tube at their bases. Pods flattened, 3 to 4-jointed, $\frac{1}{2}$ to 1" long. March to July. In sandy soil.

Aeschynomene viscidula Michx.

Plants with sticky, spreading stems, small pinnately compound leaves, small yellow, pea-shaped flowers, followed by flat, jointed pods that are straight on one suture and scalloped on the other. Leaves alternate, about 1" long, consisting of 3 to 9 unequal sided, obovate leaflets each about $\frac{1}{4}$ " (7mm) long. Flowers small, yellow, in slender hairy, axillary racemes longer than the subtending leaves. Stamens in 2 groups of 5 each. Pods less than 1" long, separated into 2 to 3 joints, that are straight on one side and rounded on the other.

Amorpha fruticosa L.

False Indigo.

Shrub with once pinnately compound leaves and branches terminating in long, slender, simple or branched, spike-like racemes of very small dark purple flowers. Leaves pinnately compound, alternate. Leaflets 11-25, elliptical to oblong, $\frac{1}{2}$ to $1\frac{1}{2}$ " long. Calyx small, 5-toothed. Corolla, one petal, which folds around the 10 stamens and style. Pods slightly over $\frac{1}{4}$ " long, usually curved, conspicuously marked with amber-colored, raised glands. Not common. Banks of streams. Genus name originates in the Gr. *a-*, without, *morphe*, form, from the absence of the four petals.

GERANIACEAE. Geranium Family.

Geranium texanum (Trelease) Heller.

Wild Geranium.
Crane's Bill.

Plants with radially spreading branches, small, white to pale purple flowers less than $\frac{1}{4}$ " across, usually in pairs, followed by conspicuous fruits that strongly resemble the beak of a crane. Leaves simple, opposite or alternate. Blades rounded, more than 1 vein at base, deeply 5-lobed, the lobes wedge-shaped

and cut into smaller lobes or blunt teeth. Petals 5, small, notched at apex. Stamens 10, 5 longer alternating with 5 shorter. Fruit usually in 2's, on long stems coming out of the axils of the leaves, 5-lobed at base and tapering into a beak about $\frac{1}{2}$ inch long. March and April. Widespread. Genus named from Gr. *geranos*, crane, from the fruit.

Erodium texanum A. Gray. Stork's Bill. Pine Needle.
Wild Geranium.

Plants with several forking stems coming from a common taproot and conspicuous, 5-petaled, rose-purple flowers about 1 inch across. Leaves simple, opposite, or alternate. Blades ovate in outline, long stalked, usually cut into 3 to 5 incised or toothed lobes. Petals 5, falling early. Stamens 5. Fruit 5-lobed at base and tapering into a beak 2 to 3 inches long which gives it its popular name. March and April. Grows in patches, usually on well drained rocky hillsides. Leaves subject to a warty growth that turns red, and is sometimes mistaken for flowers. Genus receives its name from the Greek *Erodios*, heron, from the fruit.

Erodium cicutarium (L.) L'Her. Pin Clover. Alfileria.
Filaree.

The long, sharp-pointed fruits of this hairy plant give it the name pin-plant. Leaves simple, alternate, finely dissected and fernlike. Flowers small, delicate purple or lavender, about three-eighths inch across, in clusters at the end of long, slender axillary stems. Petals 5. Fruit similar to Wild Geranium but 1 to $1\frac{1}{2}$ inches long. Valuable as a forage plant for cattle.

LINACEAE. Flax Family.

Linum sulcatum Riddell.

(*Cathartolinum sulcatum* [Riddell.] Small.) Yellow Flax.

Leafy plants, 8 to 16 inches tall, with several slender-stemmed branches coming from the main root, and many bright orange-yellow, fragile flowers about 1" across, with reddish veins

in center. Leaves simple, alternate. Blades narrowly lanceolate, 1 inch or less long, closely appressed to the stems, one main vein at base and two fainter ones running parallel close to the margin. Petals 5, yellow with orange-red base on the inner side, delicate and falling off at the least disturbance. Stamens 5. Fruit a small, 5-celled ovoid pod. March to June. Widespread.

Linum multicaule Hook.

Dwarf Flax.

(*Cathartolimum multicaule* Hook.)

Similar to Yellow Flax given above but not as tall (4 to 8"), leaves smaller (about $\frac{1}{4}$ " long), and more numerous and more closely appressed to and crowded along the stem. Flowers about $\frac{3}{4}$ " across. April and May. Not common.

Linum rupestre Engelm.

Tall Flax.

(*Cathartolimum rupestre* [Engelm.] Small.)

Pale, slender, swaying, wand-like stems, tufted at the woody root and bearing loose clusters of small, fragile, pale yellow, 5-petaled flowers. Leaves simple, alternate or scattered. Blades small, linear, less than 1 inch long, closely appressed to the stems, and falling early. Flowers about $\frac{1}{4}$ " across. April to July. In dry, limestone soil, frequently rooted in crevices of flat limestone rocks and boulders. Related to *Linum usitatissimum*, an annual with deep blue flowers which furnishes the world with linen from its fibre and linseed oil from its seeds.

OXALIDACEAE. Wood-Sorrel Family.

Oxalis drummondii A. Gray. Violet Wood-sorrel. Sour Grass.

Oxalis vespertilionis I. & G.

(*Ionoxalis drummondii* [A. Gray] Rose).

Low stemless herbs with flower and leaf stalks coming directly out of the ground. Leaflets 3, sour, deeply notched at apex and broader than long, strongly resembling the Shamrock of the ancient Irish. Flowers rose to purple, open bell-shaped, about 1 inch across, several (ten or less), at the end of slender,

juicy stems. Petals 5. Stamens 10. Pods several seeded, oblong, about $\frac{1}{4}$ " long. Bulbs small and consisting of thick scales. People chew the leaves and stems for the sour but agreeable tasting juice. Summer and fall. Widespread, but not common.

Oxalis corniculata L. Yellow Wood-sorrel. Sour Grass.
(*Xanthoxalis corniculata* [L.] Small.)

Children like to chew the leaves of this plant because of the agreeable sour taste. The thin clover-like leaf is made up of 3 short, broadly heart-shaped leaflets with their points united at the tip of the long, slender leaf-stalks. Flowers bright golden yellow, $\frac{1}{4}$ to $\frac{1}{2}$ " across, solitary or in pairs at the head of the long, naked stalks that come out of the axils of the stem leaves. Petals 5, thin, shallowly notched at the apex and usually with a few red dashes at base. Stamens 10. Pods usually in pairs, erect, oblong, angled, $\frac{1}{2}$ to 1 inch long, containing many tiny seeds. Flowers open in bright sunlight and close at sundown. Leaves are sensitive and droop and fold together at night or when disturbed.

ZYGOPHYLLACEAE. Caltrop Family.

Tribulus terrestris L. Sandbur. Bur-nut. Puneture Plant.

Silky-hairy plants with radially spreading, prostrate branches, well known in late summer for the treacherous burs that are scattered along the stems. Leaves pinnately compound. Leaflets 10 to 14, entire, and conspicuously unequally sided. Flowers orange-yellow, $\frac{1}{2}$ inch or less across, solitary in the axils of the leaves. Petals 5, falling early. Stamens 10. Pods small, stout, 5-angled, and splitting into 5 sections each armed with a pair of stout spines. Flowers open at night and close with the appearance of the morning sun. In waste places. Introduced from Southern Europe.

The following excerpt is taken from the September 10th, 1921, issue of the Scientific American:

PUNCTURE PLANT PROTECTION

"If you can imagine a roadside sprinkled liberally with tacks and needles, all lying point-side upward, ready to spread discomfort and disaster among the touring motorists and bicyclists which pass that way, you will frame a good mental picture of actual conditions existent in sections of Arizona and California where the puncture plant has been introduced and acclimated. Scientifically this weed is known as *Tribulus Terrestris* probably because it spreads tribulation and terror among all owners of inflated-tire vehicles. It is a native of southern Europe and was introduced to this country in burs imbedded in the fleeces of imported sheep. When mature, the fruits, or burs, of the puncture plants split into 5 sections, each of which is equipped with a pair of sharp spines. These sections are scattered about over the ground in such a way that some of the points are always directed upward ready to penetrate and puncture any rubber tires which pass over them.

When the spiny needles of the puncture plant are embedded in automobile tires it is very difficult to locate and remove these destructive bayonets which repeatedly prick holes through different inner tubes as they are inflated in the contaminated casing. The spiny seeds effect a double dose of damage inasmuch as they spread the infection to new sections which previously may have been unacquainted with the obnoxious plant. The seeds may be carried in automobile tires long distances and finally deposited by the roadside where they germinate and produce new plants. In addition, the seeds are disseminated widely by wind, rain, flood, spring freshet and snow. They often work their ways into the coats of market live stock or else the puncture weeds are harvested with market hay. Recently, in one way or another, seeds of the puncture plant have been introduced into Kansas, Arkansas, Texas, Nebraska, Iowa, Indiana and Illinois, and at present

the objectionable burs and spiny seeds are causing much havoc among the motorists of those regions. The possibilities for damage from this plant are well illustrated by the experiences of a California motorist who reported 70 punctures in one tire, all due to the puncture vine. In some sections where the puncture plant has become established, one-half of the bicycle tire and approximately one-quarter of the automobile tire punctures result from the spiny burs of this plant which are distributed along the waysides.

Fortunately, the puncture plant is an annual and on tillable ground, it can be controlled by repeated cultivation which prevents the formation of seed. Along the roadsides, where the weeds are most dangerous from the standpoint of the motorists, mowing has been resorted to unsuccessfully as an eradication expedient. The vines grow so low and spread so close to the ground that it is impossible to cut them off satisfactorily with the mower before they form seed. Furthermore, many of the plants which are clipped will subsequently produce burs and seed the same season. The national agricultural authorities are now testing out the effectiveness of iron sulfate and crude oil sprays for destroying the puncture plant. Potentially, they expect to perfect control measures which will minimize the motor-ing dangers due to the puncture plant, the unwelcome emigrant which reached our shores by stowaway methods."

Kalstroemia hirsutissima Vail.

Caltrop

Hairy plants, with stout, radially-spreading, prostrate branches, orange-colored, 5-petaled flowers and pinnately compound leaves of 6 to 10, unequally-sided leaflets. Flowers about $\frac{1}{2}$ " across, singly terminating axillary peduncles $\frac{1}{2}$ to 1" long. Petals 5, orange. Stamens 10, 5 long, 5 short. Sepals 5, narrow, hairy. Pod globose, about $\frac{1}{4}$ " across, with 10-12 rough, warty angles, and a thick stout beak as long as the body. Sepals persistent. April to fall. Common weed. Differs from *Tribulus terrestris* in the larger and fewer number of leaflets, the deep

orange flowers, and the fruit never being spiny. Flowers close with the heat of the morning sun. Genus is named for Kallstroem.

Pottiera angustifolia (Engelm.) A. Gray. Guayacan.

Stiff, scrubby, compact, evergreen, leafy shrubs with thick stubby branches and beautiful violet-purple flowers. Leaves compound, dark green, opposite. Leaflets 4 to 8 pairs, small, narrow, entire, leathery. Flowers about $\frac{3}{4}$ " across. Petals 5, lilac to violet. Stamens 10, as long as the petals, unequal in length. Ovary covered with pale silky hairs so that the older flowers have a silky tuft in the centers. Pods 2-lobed, heart-shaped, flattened, containing two shiny, orange colored seeds. (Fruit in earlier stages is a hairy, flattened, short pod with a long beak). April. Widespread, in sand as well as on the limestone hills.

MALPIGHIACEAE. Malpighia Family.

Thryallis angustifolia (Benth.) Kuntze. Thryallis.

An unusual plant with erect, slender branches 10 to 16" long, tufted at the woody base and spired by red buds and equally brilliant yellow, orange or red flowers. Leaves simple, opposite. Blades toothless, linear to lanceolate above, oval to oblong below, $\frac{1}{2}$ " to $1\frac{1}{2}$ " long, different from other leaves in having 2 minute glands at or near the base of the blade. Flowers small, yellow soon turning red, blossoming up the lengthening branches. Petals 5, about $\frac{1}{4}$ " long, broad above and contracted into thread-like bases below. Stamens 10. Pods small, 3-celled, tipping short threadlike pedicels that branch off the upper part of the main stems. Not common. On dry, usually rocky soil.

RUTACEAE. Rue Family.

Thamnosma texana (A. Gray) Torr. Dutchman's Breeches.

Low, tufted, leafy, blue-green aromatic plants, usually shrubby close to the ground and sprinkled with small, yellow

flowers and tiny, 2-lobed pods as broad as long, conspicuously dotted with glands, and resembling a pair of breeches. Leaves simple, alternate. Blades small, less than 1" long, strong-scented, entire, finely dotted with glands. Flowers yellow, less than $\frac{1}{4}$ " across, scattered along the upper parts of the stems. Sepals 4, minute, blunt tipped. Petals 4, yellow, sprinkled with minute glands. Stamens 8. February to June. Usually poor, dry soil. Genus has its origin in the Greek *thamnos*, bush, *osme*, odor, from the strong-scented leaves.

Ptelea trifoliata L.

Hop Tree.

Skunk Bush.

A deciduous shrub with strong-scented, compound leaves of three entire leaflets. Its clusters of flattened, circularly-winged fruits (about $\frac{3}{4}$ " across) resemble a bunch of tiny castanets and produce a delightful rustle in the wind in the fall. Flowers very small (about $\frac{1}{4}$ " across), in branched, greenish-yellow clusters at the ends of the branches. Petals 4 or 5. Stamens 4 or 5, abortive in the pistillate flowers. Prefers shaded and rich soil.

SIMARUBACEAE. Quassia Family.

Castela nicholsonii Hook.

Goatbush.

"Amargoso"

Usually very low growing shrub with delicate spines on the younger branches and tiny, deep orange or scarlet flowers that are scattered usually in pairs along the pale stems. Leaf-blades thick, linear, less than $\frac{3}{4}$ " long, shiny and green above, silvery or paler beneath, with slightly rolled-back margins. Petals 4. Stamens 8. Fruits round, red, flattened, stony, about $\frac{1}{4}$ " across. April to June. In dry, rocky soil. Rare. The bark is very bitter and used in medicine by the Mexicans.

POLYGALACEAE. Milkwort Family.

Polygala alba Nutt.

Milkwort.

White Wings.

Slender wands of small white flowers oddly built with two bright (usually white) wings, a pouch, and a bit of crest. Stems tufted at root, slender, wiry, finely grooved, erect, 6 to 18" tall,

leafy below, sparingly so above, with the delicate flowers forming and maturing in succession as the tips of the branches lengthen. Leaves simple, alternate. Leaf-blades less than 1 inch long, entire, very narrow, smooth. The peculiar construction of the flower is somewhat suggestive of an Orchid. Two of the five sepals are enlarged and colored like the petals and form a pair of wings on either side of the corolla, almost hiding the 3 smaller petals. Stamens 8. Pods very small, 2-celled, flattened, one seed in each cavity. Limestone hills and slopes. March to September.

Polygala lindheimeri A. Gray.

Low branched plants, with thick, tough, perennial roots, short branches (4 to 12"), and short racemes of small, purple, apparently pea-shaped flowers. Leaves simple, alternate. Leaf-blades small ($\frac{1}{8}$ to $\frac{1}{2}$ " long), leathery, obovate, oblong or elliptic or lanceolate, entire, sessile or very short petioled. Sepals 5, unequal, two of them larger, colored like the petals, and forming the 2 wings of the flower. True petals 3, united at their bases, the middle one largest and crested, the other 2 narrow, notched or mitten-shaped. Stamens usually 8. Capsule small, 6-7mm. long, elliptic-oblong, notched at the top. Found growing in the limestone hills of the Edwards Plateau usually firmly rooted in a limestone crevice. Rare. May, June and July. Genus receives its name from Gr. *polys*, much, *gala*, milk, from its supposed good pasturage qualities.

EUPHORBACEAE. Spurge Family.

Andrachne phyllanthoides (Nutt.) Muell. Arg. *Andrachne*.

The flowers of many of the spurges are difficult to see, often lacking all that makes a flower noticeable but they are always odd and interesting. These plants grow 1 to 2' high, and have tufted branches that spread out of the dirt-filled cracks of broad, flat limestone rocks. Leaves simple, alternate. Blades bright green, broadly oval, sometimes obovate, about $\frac{1}{2}$ " long. Flowers minute, inconspicuous, solitary, on short thread-like pedicels in

the axil of each leaf. Sepals 5 or 6. Petals 5 or 6, greenish yellow, inconspicuous. Stamens 5 or 6. The small, round flattened capsules separate into 3 parts. March to July.

Phyllanthus polygonoides Nutt.

Phyllanthus.

These leafy plants resemble *Andrachne* in general appearance and habits. Plants much smaller (6 to 14 inches high). Leaf-blades deeper green, slightly larger above the middle and narrowed at base, much smaller (less than $\frac{1}{2}$ " long). Flowers smaller, minute, more often in 2's and 3's in the axils of the leaves all along the stem. Petals none. Sepals 5 or 6, green, white-margined. Capsule smaller. Fruits conspicuous, flattened, rounded pods growing in a 5 or 6-sepaled cup. The sepals are at least 5 times their blossoming size when in fruit. Found growing in dirt-filled cracks of limestone rocks, and at base of rocks on well-drained hillsides of the Edwards Plateau region.

Croton monanthogynus Michx.

Mexican Tea.

Rusty-colored, aromatic plants, 8 to 12 inches tall, with 3 or 4-forked branching above, these branches often 2 or 3-forked. Leaves simple, opposite or alternate. Blades oblong to ovate, $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, entire, green above, paler or silvery beneath, covered with minute, star-shaped, rusty hairs. Flowers inconspicuous, in spikes less than $\frac{1}{2}$ " long, the upper with stamens only, the lower pistillate. Fruit a 2-celled, ovoid capsule. Pistillate flower has 5 sepals, no petals, and a small 3-lobed capsule. This plant is gathered and dried for tea by Mexicans. Spring to fall. A common weed.

Croton fruiticulosus Engelm.

Shrubby Croton.

Pale, much branched, aromatic shrub with greyish-green, toothless leaf-blades, green above and pale beneath due to a covering of minute, star-shaped hairs. Flowers inconspicuous, in short racemes. Staminate flowers with 5 sepals, 5 petals, and 9 or 10 stamens. Pistillate flowers with 5 sepals, no petals, and a 3-

lobed ovary. Fruits small, 3-lobed, 3-seeded pods bearing a six-lobed stigma at its tip and covered with star-shaped hairs. Prefers ledges of limestone bluffs.

Croton texensis (Klotzch) Muell. Arg.

Slender annuals, 1 to 2' tall, with the stems and branches 2 or 3 forked. Leaf-blades linear or lanceolate, 2 to 6" long, entire, blunt at the apex. Petioles shorter than the blades. Flowers either staminate or pistillate on separate plants. Petals wanting. Staminate flowers have 8 to 12 stamens. Fruits rounded, 3 or 4-lobed, about $\frac{1}{4}$ " across, conspicuously covered with tufts of branched hairs. In sandy soil to the south and east of San Antonio.

Ditaxis mercurialina (Nutt.) Coulter
(*Argythamnia mercurialina* Muell.)

Plant with a "musky" odor and erect, channelled, hairy stems branching from a thick perennial root, deep green 3-nerved leaves, and slender ascending axillary racemes of inconspicuous green flowers. Leaves simple, alternate. Blades sessile, oblong-ovate to lanceolate, entire, ascending, 1 to 3" long. Flowers green, inconspicuous, slender-peduncled, in axillary ascending racemes longer than the subtending leaves. Pistillate flowers consist of 5 lanceolate sepals. Petals none. Staminate blossoms have 5 sepals and 5 wedge-shaped petals equalling the sepals. Pod 3-lobed, depressed, about $\frac{1}{2}$ " across, bearing the 3-cleft, 2-lobed styles at the summit. April to July. Rocky hillsides.

Acalypha radians Torr.

Three-seeded Mercury.

Cardinal Feather.

Conspicuously hairy plants with ascending or spreading stems, simple rounded leaf-blades, $\frac{1}{4}$ to $\frac{3}{4}$ " across, and short, slender spikes of tiny, often red feathery flowers or longer compact ones. Margins of leaves conspicuously lobed with 7 to 15 long, blunt, flaring teeth. Petals none. Pistillate flowers short, on oblong spikes, the 3-lobed ovary tipped by a feathery red

stigma and sessile in a rounded leaflike bract similar to the leaves. Spring to late fall. Widespread but not common. Pistillate and staminate blossoms are on separate plants.

Acalypha lindheimeri Muell. Arg.

Cardinal Feather.

Plants 1 to 2' tall, with thin, broadly lanceolate or ovate, toothed leaves, the many ascending, frequently reddish branches ending in fringy, red spikes, 1 to 2" long. Leaves simple, alternate. Blades ovate, 3-nerved at base, 1 to 2" long. Flowers red, on fringed spikes, 1 to 4" long. Sepals and petals none. Pistillate part of the flower in the lower part of the spikes, easily distinguished by the toothed leafy bracts which inclose the 3-lobed seed cases that bear a tuft of branched red hairs at the tip until they are fully matured. April to late summer. In limestone soil.

Tragia nepetaefolia Cav.

Stinging Nettle.

Erect or reclining plants with stems 8 to 14 inches long, covered with stinging hairs and bearing conspicuous, deeply 3-lobed, bristly-hairy pods crowned by a 3-lobed stigma and containing 3 globular, brown seeds. Leaves simple, alternate. Blades usually lanceolate (sometimes triangular-ovate), $\frac{3}{4}$ to 2" long, with flaring toothed margins and covered with stinging hairs. Lower leaves often rounded. Flowers inconspicuous, on racemes $\frac{1}{2}$ to $1\frac{1}{2}$ " long, branching out of the stem opposite the leaves. Staminate flowers consist of 3 sepals and 3 stamens. Pistillate have 5 sepals and a 3-lobed stigma. Widespread, as common in neglected cultivated fields as on dry rocky hillsides. March to late summer.

Tragia macrocarpa Willd.

Nettle-vine.

A nettle with few slender, twining stems. Leaves simple, alternate. Blades ovate to broadly lanceolate, 1 to 3" long, heart-shaped at base, very coarsely toothed, covered with stinging hairs. Petioles nearly as long or longer than the blades. Flowers inconspicuous, greenish, in very small axillary spikes. Staminate flowers consist of 3 sepals and 3 stamens. Pistillate flowers are

below the staminate, at the base of the spike, and have 5 sepals. Capsules deeply 3-lobed, depressed, covered with hairs and $\frac{1}{4}$ to $\frac{1}{2}$ " in diameter.

Stillingia linearifolia (Muell. Arg.) Small Queen's Delight.
Queen's Root.

Leafy plants with milky sap and many erect, simple stems growing from a common root, later forking above into 3 to 5 short leafy branches. Leaf-blades narrowly linear, 1 to 3 inches long, the margins having small, black-tipped teeth. Flowers inconspicuous but odd, yellowish-green, in terminal spikes, 1 to $2\frac{1}{2}$ inches long. Staminate flowers on upper part of spike. Stamens 2 or 3. Pistillate flower near the base of the spike. Petals none. Pods small, 3-lobed, 3-seeded. April to late summer. On dry, rocky hillsides.

Stillingia sylvatica L. Queen's Delight. Queen's Root.

Similar to *Stillingia linearifolia* but leaf-blades are broader, oblong to elliptic, and seed pods are about twice as big (about $\frac{1}{2}$ " across and slightly longer). The roots of this species are large, woody and thick, and used as medicine in the treatment of skin diseases and as an emetic.

Stillingia dentata (Torr.) Britt. & Rusby.

Unattractive, smooth, leafy plants, 4 to 12 inches high, and easily recognized as a Spurge by the small, strongly 3-lobed pods each crowned by a three-divided stigma, and the usual inconspicuous slender spikes of flowers. Leaves simple, alternate. Blades oblong or wedgeshaped, $\frac{1}{2}$ to 1" long, almost sessile, sharply toothed, with flaring or rarely incurved teeth. May and June. In dry soil. Not common.

Jatropha texana Muell, Arg. Bull Nettle. Tread Softly.
(*Cnidoscylus texanus* [Muell, Arg.] Small)

The best-protected plant in this county outside of the Cactus. Stout-stemmed plants with long, white, bristly stinging hairs and large clusters of fragrant, white flowers. Leaf-blades large,

round or broadly ovate in outline, 5 main veins at base, deeply three to five-lobed, the lobes variously cut and toothed, and strongly resembling the leaves of its close relative, the Castor Bean. Perianth, white, 5-lobed, about 1 inch across. Stamens numerous (10 or more). Fruit a 3-lobed, oblong, bristly pod about an inch long, containing 3 oblong, edible, mottled gray seeds. Hairs enlarged at base so that the stems look as if streaked with white. April and May. Widespread.

Euphorbia nutans Lag.

(*Chamaesyce nutans* [Lag.] Small.)

Branched annuals, 4 to 18" high, with milky sap, opposite, unequally sided, often purplish leaves, $\frac{1}{2}$ to 1" long, and inconspicuous flowers. Leaves simple, opposite. Blades oblong to narrowly ovate, sessile, unequally finely saw-toothed, green above, paler beneath, the upper surface usually purplish margined and conspicuous for the pale midrib. Flowers solitary or clustered in the upper leaf axils. Glands 4, saucer-shaped. In low moist grounds. A weed. Spring to summer. Genus named for Euphorbus, a physician.

Euphorbia marginata Pursh.

Snow-on-the-Mountain.

"Bola de Nieve"

(*Dichrophyllum marginatum* [Pursh.] Klotzsh & Gareke).

Plants conspicuous everywhere in the fall for the showy white-margined foliage of the upper part of the stems. Hairy, simple-stemmed plants, 1 to 3 feet tall, branched near the top, these branches usually forking again forming a wide-topped whitish crown. Leaves thick, scattered, ovate, toothless, folding themselves close against the stem. Leaf-like bracts at base of the flower clusters (also) conspicuously white-margined. Fruit 3-lobed, hairy pods containing 3 seeds. Late summer and fall. Prefers dry, rocky hillsides. A common garden annual of the North. This plant is not poisonous to the touch (as is often reported) but Allen & Gilbert state in their Textbook of Botany

the following, "the poison of snow-on-the-Mountain is carried by honey made from the nectar of flowers."

Euphorbia arkansana Engelm & Gray Spurge.
(*Tithymalus arkansanus* [Engelm. & Gray] Klotzsh & Gareke.)

Glabrous, olive green plant with milky sap, simple, alternate leaves overlapping each other on the stem, and blossoms without sepals or petals set deep in a cup formed by the overlapping bases of two leaflike bracts. At the numerous forks are 2 small, opposite, slightly unequal-sided, leaflike bracts containing a short-stalked, solitary, small, 3-lobed, warty capsule. At the tips of the branches below the tiny 3-lobed capsule and set deep in the leafy-bracted cups are 4 small, thick, short, yellow glands which are often mistaken for petals or stamens. February to fall. Widespread.

Euphorbia dentata Michx. Dented Spurge.
(*Poinsettia dentata* [Michx.] Small.)

Slender stemmed branched plants with milky sap, leafy tips and a knotty cluster of sepal and petal-less, inconspicuous, greenish yellow flowers in the center of the leaf-cluster. Leaves alternate below, opposite above. Blades coarsely dentate, varying from ovate at the top of the plant to linear. Seed pods with 3-rounded lobes, the size of small peas and hanging out of the involucre by a short thread. Easily recognized in fruit by the clusters of 3-lobed capsules always at the end of the stem or its branches, and by the leafy whorl at the tip. Summer and fall. A common weed.

Euphorbia havanensis Willd.
(*Poinsettia havanensis* [Willd.] Small.)

Glabrous green plant with few slender, deep green leaves and conspicuous bunches of "petal-less" green flowers set in a cluster of long, leaf-like bracts at the tip of the stem or its branches. Leaves simple, alternate. Blades 2 to 5" long, linear, entire, sometimes sparingly and shallowly toothed. Individual

flower consists largely of a minute cup-like gland and a smooth 3-lobed pod hanging out of the small 5-lobed involucre. April to July. Rich soil, preferably shaded ravines and river bottoms. This little kin of the proud Christmas plant has the family habit of tricking its long narrow leaves near the hard little flower bunches with a patch of Christmas scarlet at its base in late summer.

Euphorbia heterophylla L.

Fire-on-the-Mountain.

(*Poinsettia heterophylla* [L.] Small)

Similar to *Poinsettia havanensis* but upper leaf blades and bracts are broader and toothed or lobed. A garden annual in many places.

ANACARDIACEAE. Sumac Family.

SPONDIACEAE. Sumac Family. In Small's Flora.

Rhus microphylla Engelm. Winged Sumac. Small-leaved Sumac. (*Schmaltzia microphylla* [Engelm.] Small.)

Spreading shrub with small (1 to 1½" long) leaves, consisting of 5 to 9 small leaflets on a winged axis. Flowers inconspicuous, very small, dirty or greenish-white, in dense clusters at intervals along the stem, appearing with or before the leaves. Fruits small, red, hairy, stony, the size of a pea. March and April and sometimes again in November. Dry, stony hillsides.

Rhus virens Lindh.

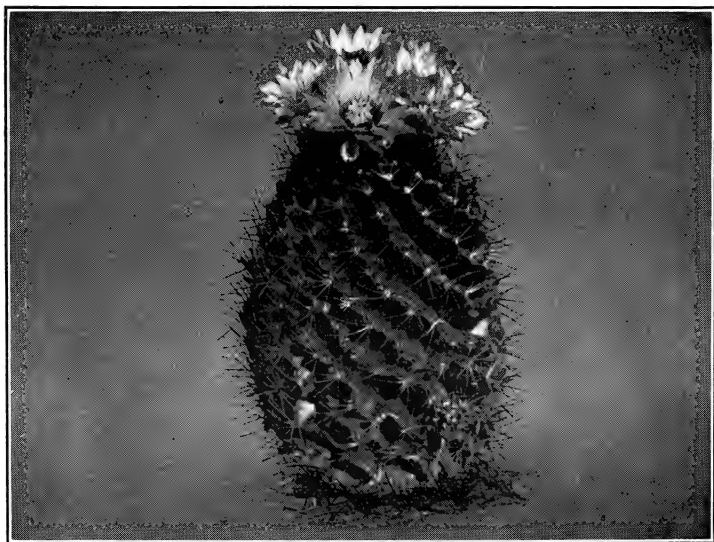
Evergreen Sumac.

(*Schmaltzia virens* [Lindh.] Small.)

Evergreen wide-spreading shrub with compound leaves of 7 to 9, deep green, entire, shiny, leathery leaflets. Flowers small, white, bell-shaped, 5-lobed, in loose clusters in the axils of the uppermost leaves. Fruits red, globular, stony, covered with short red hairs. April and May and often following rains in October and November. On limestone hills. The leaves of this shrub have the characteristic Sumac habit of turning all shades of brown and red in the fall and winter.



Opuntia lindheimeri in fruit. An unusual growth of prickly pear for this county. Note how the blossoms form on the edge of the leaf-like stems. During the periods of drought enormous quantities of this plant are fed to livestock, particularly cattle, after the thorns have been burned off by torches or "pear burners" especially made for that purpose. To the cattlemen it is one of the most valuable of our native plants.



Hedgehog cactus (*Echinocactus setispinus*). An addition to any flower bed, as the big yellow blossoms form continuously from April to late summer. A fairly common cactus in the mesquite area, but rarely seen, as it usually nestles close to a mesquite tree, or under a sheltering bush, where it is well concealed by grass and weeds.

100
100
100

100
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Rhus trilobata Nutt. Three-leaved Sumac. Skunk-bush.
(*Schmaltzia trilobata* [Nutt.] Small.) "Lemita."

Spreading shrub with palmately trifoliolate leaves. Leaflets 3, wedge-shaped, incised or scalloped above the middle, the middle leaflet usually largest (about 1" long). Flowers small, whitish, in dense clusters, blossoming with or before the leaves appear. Petals 5. Fruits small, red, inedible, stony. March and April. Usually rocky hillsides. Indians use the root bark for the red-brown strands of their baskets.

Rhus lanceolata A. Gray. Lance-leaved Sumac.
(*Schmaltzia lanceolata* [A. Gray] Small.)

Shrub, 3 to 12' high, with once-pinnately compound leaves having a winged rachis and unequal-sided leaflets, and showy, much branched, somewhat pyramidal terminal clusters of numerous very small white flowers. Leaves compound, alternate. Leaflets 13 to 19, unequal-sided, entire or indistinctly toothed, $1\frac{1}{2}$ to 3" long. Rachis narrowly winged. Sepals 5, minute. Petals 5, white, about $\frac{1}{8}$ " long, curled back against the pedicel. Stamens 5, exserted, the anthers yellow and showy. Flowers followed by large, pyramidal clusters of dark red, hairy stone fruits that terminate the many branches, which together with the crimson leaves make the shrub in fall one of our most conspicuous and decorative plants. Blossoms in late June, July and August. Limestone hills of the Edward's Plateau.

Rhus radicans L. Poison Ivy. "Hiedra".

A poisonous, thrifty, climbing, woody vine that climbs and creeps by means of aerial rootlets that anchor themselves by disks to the wood, often ascending to the tops of tall trees. Quite as often it takes a lowgrowing bushy form. Leaves compound, strongly resembling Box elder, which has paler foliage. Petioles long. Leaflets 3, variously and coarsely toothed, the middle leaflet largest. Flowers small, greenish or greenish-yellow, fragrant, in dense clusters that grow out of the axils of the leaves. Fruits resemble clusters of tiny, white grapes and hang

in long bunches from stems that come out of the axils of the leaf stems. Sap that comes from any wound is milky white, turns black when exposed to the air, and can be made into a glossy black varnish. Plants climb anything from fences, walls and cliffs to the tallest trees.

All the parts of the plant are poisonous to some people and dead leaves and stems are dangerous as well as living ones. The poison has been traced to a non-volatile oil which is found in all parts of the plant, and which upon contact with the skin causes an inflammation followed by tiny blisters which itch and burn and spread rapidly over the body when not checked. The plant is most dangerous in blossoming time and some people coming near the plant claim to have been poisoned by it *without touching it*.* If this is true, it is due to the oil adhering to the pollen that is carried by the wind.

The water from the blisters is equally poisonous and causes a similar irritation. When exposed, wash the hands as soon as possible in the nearest creek, ditch or pond. If soap and water are to be had, make a good lather with hot water as cold water will not dissolve the oil. If the skin has become inflamed or blistered, bathe with a small piece of cotton batting saturated with grain alcohol. (Wood alcohol is poisonous to the skin.) This will dry the blisters in a day or two. "Leaflets three, quickly flee. Berries white, take to flight."

AQUIFOLIACEAE. Holly Family.

Ilex decidua Walt. Deciduous Holly "Redberry".

Shrub or small tree with pale gray bark and gathered for decorative purposes at Christmas time for the scarlet berries that are scattered all along the branches. Leaves bright but deep green, 1 to 2½ inches long, wedge-shaped or often elliptic, finely saw-toothed. Flowers small, greenish-white, clustered in

* This statement is contradicted by James B. McNair in his article, *A Study of Rhus Diversiloba with Special Reference to Its Toxicity*. *American Journal of Botany*, Vol. VIII, No. 3, March 1921.

the axils of the leaves. Corolla 4-lobed. Stamens 4. Fruits stony, orange to scarlet, size of a pea. In river bottoms, usually following water courses. This is not the true American holly, *Ilex opaca*.

AESCULACEAE. Buckeye Family.

Aesculus octandra Marsh. Yellow Buckeye. Sweet Buckeye. (*Aesculus flava* Ait.)

This shrub or small tree has palmately compound leaves and great spires of yellow bloom resembling the horse chestnut blossom of the east. Leaflets 5 to 8, 2 to 3 inches long, saw-toothed. Calyx tubular, yellow, with 5 unequal, blunt lobes covered with minute glands. Petals 2 long, 2 short, similarly covered with minute glands, the longer two yellow or orange, within. Stamens unequal, 5 to 8, some longer than the petals. Pods smooth, leathery, 3-lobed, containing 3 large, smooth, highly polished seeds each marked with a round grey scar. March and April. In shaded ravines and in thick patches in shaded river bottoms.

Aesculus pavia L. Red Buckeye.

Similar to *Aesculus octandra* but having red or purplish-red flowers.

SAPINDACEAE. Soapberry Family.

Cardiospermum halicacabum L. Balloon Vine. "Jaboncillo."

Tendril-bearing vine conspicuous in fall for its 3-angled, inflated pods. Leaves compound, deep green, with 3 divisions, each division bearing 3 coarsely toothed, incised or parted leaflets. Flowers inconspicuous, white, about one-eighth inch across, usually in a 3-forked cluster, bearing two tendrils just below the fork. Pods inflated, 1 to 1¼" across, turning purplish as the 2 to 3 shiny, green, fleshy seeds the size of small peas mature and become hard and black, each seed marked at the base with a

broad, white scar. May to fall. Prefers moist situations such as banks of streams. Often cultivated for ornament.

Sapindus drummondii Hook. & Arn. Soapberry. Wild China.

Shrub or small tree with once-pinnately compound leaves consisting of 8 to 19 unequal-sided, entire-margined leaflets (each 2 to 4" long), and short branches ending in big, much branched clusters of small white or greenish flowers. Petals 4 or 5, very small. Stamens 8 to 10. Fruits berry-like, about the size of a marble, and containing orange-colored pulp similar to the fruits of the cultivated china tree of our yards and parks. May and June.

Ungnadia speciosa Endl.

Spanish Buckeye.

Texas Buckeye.

Tall shrub or small tree brilliant with clusters of deep pink to rose-colored flowers that are scattered all along the branches and appear with or before the leaves, the whole resembling the familiar peach tree in blossom. Leaves large, once pinnately compound, alternate. Leaflets 3 to 7, large, lanceolate, saw-toothed. Petals 4, erect, spreading, with a tuft of small, white or yellow fringed scales at base. Stamens 7 to 10. Filaments usually pink. Anthers red. Pods leathery, 3-lobed, containing 3 large, almost round, shiny, dark brown or black seeds. March. Low grounds and ravines.

RHAMNACEAE. Buckthorn Family.

FRANGULACEAE. Buckthorn Family. In *Small's Flora*.

Ceanothus ovatus Desf.

Red Root.

Indian Tea.

New Jersey Tea.

Shrub, usually only 1 to 2 feet tall, with deep red roots and oblong, terminal and axillary clusters of tiny, creamy-white flowers. Leaves simple, alternate. Blades 3-nerved, ovate to oblong-ovate, 1 to 2½ inches long, saw-toothed. Petals 5, turned inward at their tips. Stamens 5. Pods small, 3-lobed. Closely related to *Ceanothus americanus*, an historic plant of the Revolu-

tion when its leaves were brewed for tea. *C. ovatus* would have been just as good if it had grown where the people then lived. Roots yield a brown dye. March to May. Found on the limestone hills north and west of San Antonio.

Colubrina texensis A. Gray.

Shrub, 3 to 6 feet high, with pale grey, zigzag, divergent branches and clusters of small, simple leaves and inconspicuous greenish-yellow flowers at intervals along the many branches. Leaves simple, alternate or clustered. Blades ovate to elliptic, 1 inch or less long. Fruit hard, the size of large peas, when dry separating into 3 nutlets. Prefers poor, dry soil. Very common. March to April.

Ziziphus obtusifolia (Hook.) A. Gray.

Lotebush.

Texas Buckthorn.

A rigid, much branched, thorny shrub with the younger branches greenish gray, streaked lengthwise, and ending in a long thorn. Leaves ovate to oblong, $\frac{1}{2}$ to $1\frac{1}{4}$ " long, entire or shallowly toothed. Flowers very small, flat, 5-pointed, greenish, in small, inconspicuous clusters. Fruit black, mealy, stony, the size of very large peas. February to September. In dry soil. Common. The fruit may be eaten but is not palatable.

Rhamnus caroliniana Walt. Indian Cherry. Yellow Wood.

Yellow Buckthorn.

Shrub or small tree, with conspicuously feather-veined leaves, 2 to 4 inches long, and few-flowered clusters of small whitish or greenish flowers in the axils of the upper leaves. Leaves simple, alternate. Blades firm, the texture of a cherry leaf, oblong or elliptic, shiny above, downy beneath, minutely and shallowly saw-toothed. Leaf-stalks short. Petals 5, triangular-ovate, about $\frac{1}{3}$ as long as the sepals. Stamens 5. Fruits globular, black, 3-seeded, about $\frac{3}{8}$ " across. April and May. Wooded river bottoms and hillsides.

Condalia obovata Hook.

Bluewood.

Brasil.

Thorny evergreen shrub or small tree, with stiff spreading branches and conspicuously light green foliage. Youngest branches end in thorns. Leaves simple, alternate or clustered, small, obovate, entire. Flowers inconspicuous, minute, greenish, star-shaped. Fruit small, black, edible, the size of small peas and containing a small stone. May to fall. In poor, dry soil. The fruits make fine jelly but are seldom used as they are so small and difficult to gather.

VITACEAE. Grape Family.

Vitis candicans Engelm.

Mustang Grape.

A vigorous vine with shreddy bark, climbing by tendrils. Leaves simple, alternate. Blades large, ovate to rounded-ovate in outline, 2 to 4 inches broad, shallowly toothed and angularly lobed, shiny green or with few spidery hairs above and densely white woolly underneath. Petioles about $\frac{1}{2}$ as long as the blades. Flowers very fragrant, minute, greenish, in branched drooping clusters 1 to 3" long. The 4 or 5 small green petals cohere at the top and fall off together without expanding. Fruit juicy, acid, pleasant-tasting berries (grapes) twice the size of large peas. Gathered for pies and jellies when green or when ripe. Fruit ripens in June and July. In low grounds. These plants climb fully a hundred feet where water is abundant.

Vitis berlandieri Planch.

Winter Grape.

Summer Grape.

A vine climbing by tendrils similar to *Vitis candicans* but the leaves lack the dense white woolly covering underneath. Blossoms in April and May, the grapes ripening in August and September. In low grounds and limestone hills in which locations it does not climb extensively.

Vitis rupestris Scheele.

Sand Grape.

Sugar Grape.

A bushy plant, 2 to 7 feet high, (sometimes slightly climbing), with forked tendrils, coarsely toothed leaves, and clusters

of flowers and fruits similar to the grapes given above. Leaves simple, alternate. Blades commonly broader than long, sometimes heart shaped, $1\frac{1}{2}$ to 4 inches across, very coarsely toothed, often slightly and irregularly lobed, not hairy. Grapes are purple-black, slightly covered with a bloom, pleasant to the taste, and ripe in August. These bushy plants are most common in dry, stony or gravelly creek beds.

Cissus incisa Desmoul. "Yerba del Buey." "Hierba del Buey".

A vine climbing by tendrils, and having thick, crisp, fleshy, 3-lobed or 3-foliate leaves that have a very disagreeable odor when crushed. Margins of leaf-blades sharply and irregularly cut. Flowers yellowish-green, in clusters similar to Virginia Creeper. Fruit small, 1 or 2-seeded, black, inedible, the size of small peas, clustered like grapes. June to fall. In dry soil. Commonly seen climbing over fences and brush. This vine is commonly confused with poison ivy.

Ampelopsis arborea (L.) Rusby.

Pepper-vine.

A climbing vine with few tendrils, and dark green leaves similar to the Chinaberry tree of our yards. Leaves twice pinnately compound. Leaflets many, small, coarsely toothed, ovate to cuneate-obovate, about 1 inch long. Flowers small, inconspicuous, greenish, clustered like grapes. Fruits small, black or dark purple, inedible. June to September. In low, moist places, usually river and creek banks. Common in Brackenridge Park.

Parthenocissus heptaphylla (Buckl.) Britton

Ampelopsis heptaphylla Buckl.

Texas Virginia Creeper.

Woody-stemmed vine with palmately-compound leaves and climbing by tendrils that branch and end in adhering disks. Leaflets mostly 7. Blades oblanceolate to oblong-lanceolate, long-pointed, coarsely toothed above the middle (sometimes incised), narrowed at the base. Flowers greenish, loosely clustered. Fruits 3 to 4-seeded, black or dark blue berries the size of peas.

A good creeper on wood or stone. Resembles the common Virginia Creeper but is not as rank in growth. Usually found creeping on trunks of trees or over fences. Widespread but not common. Very attractive in the fall when the leaves turn scarlet.

MALVACEAE. Mallow Family.

Abutilon incanum (Link) Sweet.

Indian Mallow.

Much branched plants, 1 to 3 feet tall, with velvety leaves and small 5-petaled, orange-colored flowers. Leaf-blades thin, velvety, $\frac{1}{2}$ to 4" long, ovate, sharp-pointed, toothed, heart-shaped at base. Petioles as long as the blades or shorter. Flowers orange-yellow, $\frac{1}{2}$ to $\frac{3}{4}$ inch across, solitary on slender pedicels, in the axils of the leaves. Petals 5. Stamens many, united at base. Fruit a rounded capsule, $\frac{3}{8}$ " high, and 7 to 9-angled at summit. April to October. Rocky hillsides.

Wissadula holosericea (Scheele) Garcke.

Velvet Leaf

Similar to Indian Mallow but with stems woody near the ground, and leaf-blades thicker, much longer, wider, coarsely but shallowly toothed, often shallowly 3-lobed. Flowers larger, 1" or more across, and fruit separating into 5 hairy carpels, each carpel having a cross partition in it, which *Abutilon* does not have. April to October. Prefers limestone soils.

Malva parviflora L.

Cheeses.

Plants with spreading branches, 1 to 2' long, long-petioled leaves with blades broader than long, and 1 to 5 whitish or purple tinged flowers about $\frac{1}{2}$ " across, in the axils of the leaves. Leaves simple, alternate. Leaf-blades reniform or suborbicular, angulately-lobed, the lobes finely scalloped, veins several at base. Petioles several times longer than the blades. Petals 5, white or purplish. Fruit similar to a cultivated hollyhock, only smaller (about $\frac{1}{4}$ " across). March to June. Rare. In waste places.

Callirhoe digitata Nutt. Wine Cup. Wild Hollyhock.

Whole fields sparkle with this flower, the color of rich red wine, and the loveliest of all the mallows. Stems slender, solitary or branched at base, 1 to 2' high, covered with a "bloom". Basal leaves slender, hairy, on petioles as long as the leaves or longer. Blades sessile and rounded or 5 to 7-parted. Stem leaves few, generally palmately divided into linear lobes. Flowers deep red-purple, cherry red or wine-colored, 1½ to 2 inches across. Petals 5, frilled at their tips. Stamens numerous, united at base. April and May. Usually growing in big patches along railroad tracks, roadsides and open grounds. Easily distinguished from the species following by the thick perennial roots and the hairy petioles of the basal leaves.

Callirhoe pedata A. Gray. Wine Cup.

Similar to *Callirhoe digitata* but is an annual (lacks the thick perennial roots), petals fringe-toothed at the end, slightly longer (2-2.5cm) instead of 1.5-2cm), leaves mostly from the root, and blades more nearly rounded in outline. Common and widespread. Genus receives its name from the Gr. *kallirhoe*, a spring at Athens.

Malvastrum americanum (L.) Torr. False Mallow.

Plants covered with silky, appressed hairs (many 2 to 3 forked) and bearing yellow flowers on short stalks in the axils of the leaves. Leaves simple, alternate. Blades broadly ovate to oblong-ovate, (1 to 2½" long), coarsely saw-toothed. Petioles 1/3 to ½ as long as the blades. Petals 5, light yellow, longer than the sepals, expanding about noon. Stamens many, united at base. Fruit flattened, separating into 8 to 12 hairy carpels, each with 2 beaks on the back, similar to the fruit of wine cups but smaller (about ¼" across). Low ground, sometimes in dry soil. Common. Not attractive. March to fall.

(*Sida physocalyx* A. Gray.)

Sida hastata St. Hil.

Plant with pale yellow or buff or orange-yellow flowers in the axils of the leaves, and distinguished from other mallows by the fruit having 10 carpels inclosed in a 5-angled bladder-like pod. Leaf-blades oblong to ovate, 1 to 2½" long, blunt tipped, scalloped saw-toothed margins, and covered with forked hairs. Petioles as long as the blades or shorter. Flowers solitary, on slender axillary pedicels about 1" long. Petals 5, not longer than the sepals. Stamens united at the base. April to July. Common weed of roadsides and fields. Sometimes confused with *Physalis mollis* (Ground Cherry) but differs in that *Physalis* has only 5 stamens and a tomato-like fruit inclosed in the inflated calyx while *Sida* has numerous stamens and a flattened fruit that separates into ten parts like the cultivated hollyhock. Calyx of 5 broad, ovate sepals that meet at their margins and form a ballon-like pod around the carpels.

Sida diffusa H. B. K.

Small-leaved *Sida*.

Low plants with simple, spreading, prostrate, slender branches coming from a long woody tap root, and delicate pale yellow flowers about ½ inch across, solitary on thread like axillary pelicels longer than the leaf stalks. Leaves alternate, ¼ to ¾" long, lanceolate to ovate, toothed. Petals 5, pale yellow, delicate. Stamens many, united at base. Fruit 5 small carpels, each bearing 2 teeth at the tip, and all of them inclosed by the green, 5-angled, ribbed calyx cup. April to fall. In poor, dry soil. Flowers open only in full sun.

Sida longipes A. Gray.

Perennial with few long slender erect stems, mostly narrowly lanceolate leaves, fairly distant on the stem, and orange-yellow, 5-petalled flowers about 1" across, solitary on slender, almost thread like axillary peduncles. Leaves simple, alternate. Blades broadly linear-lanceolate to linear-oblong, 1 to 3" long, saw-toothed. Petioles short, less than ½" long. Calyx 5-lobed.

Stamens numerous, united at their bases similar to all mallows. Fruit about $\frac{1}{4}$ " across, consisting of small carpels arranged in a circle around a central axis similar to the fruits of wine cups and hollyhocks. March to July. In the sandy region to the south and east of San Antonio. Flowers close at night.

Pavonia lasiopetala Scheele.

Rose Mallow

A lovely mallow with gorgeous pink, rose-like flowers and soft-velvety, alternate, ovate or heart-shaped leaves. Flowers rose-pink to rose-red, over 1 inch across, solitary on long pedicels in the axils of the leaves. Petals 5. Calyx consists of 5, ovate, 3 to 5-nerved sepals united below the middle, and a circle of 5 slender bractlets at the base of the sepals. Stamens united in a tube at base. March to June. Rich, shaded ledges of limestone rocks and hillsides.

Malvaviscus drummondii Torr. & Gray.

Mexican Apple.

Red Mallow.

Spreading plants with large, velvety leaves and brilliant crimson, tubular flowers that have a long, red, twisted stamen-tube surpassing the corolla at least half an inch. Leaves simple, alternate. Blades 2 to 4" broad, rounded in outline, shallowly 3-lobed, with heart-shaped base. Petioles shorter than the blades. Petals 5, rolled lengthwise into a tube. Stamens twisted in a red column and extending about $\frac{1}{2}$ inch beyond the corolla. Fruit flat, red, edible, apple-like bodies, the source of one of its common names. Spring to fall. Usually in shaded places. Sometimes cultivated.

Spharalcea cuspidata (Gray) Britton.

Pompadour Mallow.

Nigger-weed.

"Hierba negra".

Ashy-green plants 1 to 4 feet high, with rose to salmon flowers blossoming up the ever lengthening, erect, leafy stems. Leaves simple, alternate. Blades rough with tiny, star-shaped hairs, narrowly oblong to lanceolate, wavy margined and irregularly scalloped, usually with a larger lobe at base. Flowers

about $\frac{3}{4}$ inch across, one to several, clustered in the axils of the leaves and blossoming only one or two at a time in each cluster. Petals 5, unequally and shallowly lobed at the tip. Stamens numerous, united half way up their length. March and April. Usually in sandy soil. Not common. Very effective through the rich color contrasts of the soft greyish-green foliage and the bright rose-colored blossoms.

STERCULIACEAE

BUETTNERIACEAE. *Chocolate Family*. *In Small's Flora*.

Hermannia texana A. Gray

Mexican Mallow.

Pale green, branched, shrubby plants with dull scarlet flowers and 5-lobed pods that are feathered on the angles. Leaves simple, alternate. Blades ovate to rounded, $\frac{1}{2}$ to $2\frac{1}{2}$ " long, toothed and covered with tiny star-shaped hairs. Flowers about $\frac{1}{2}$ inch across, in loose clusters in axils of the leaves and strongly resembling the Pompadour Mallow in general appearance. Petals 5. Stamens 5. Pods $\frac{1}{2}$ to $\frac{3}{4}$ " long, $\frac{3}{8}$ to $\frac{1}{2}$ " wide, covered with star-shaped hairs, feathered on the angles, 5-lobed, with several seeds in each division. April to fall. In ravines and on rocky hillsides.

Melochia pyramidata L.

Small, shrubby plants with blue flowers and small clusters of conspicuously 5-winged pods. Leaves simple, alternate or clustered. Blades ovate to oblong or rounded, $\frac{1}{4}$ to $1\frac{1}{2}$ " long, finely saw-toothed, mostly rounded at base. Flowers solitary or clustered on short peduncles about $\frac{1}{4}$ " long, terminal or coming out of the stem opposite the leaves. Sepals 5. Petals 5, blue to violet. Stamens 5, united only at the base. Fruits inflated, about $\frac{1}{2}$ " across, 5-angled, shaped like a pyramid, the wings with sharp tips near the base. May, June and July. In gravel banks of streams or dirt-filled cracks of flat limestone rocks.

CISTACEAE. Rock-Rose Family.

Helianthemum majus (L.) B. S. P.

Frost-weed.

Erect, woody-stemmed plants, 12 to 18" high, with simple, alternate, entire leaves and many fragile, light yellow, 5-petaled flowers, about 1" across, scattered over the top. Leaf-blades oblong-lanceolate or oblong, $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, greyish underneath, darker green above, either short petioled or sessile. Flowers loosely clustered at the ends of short ascending branches. Petals 5, very delicate, and falling early. Stamens about 30. Pods small, ovoid, containing 30 to 60 very small seeds. March, April and May. In sandy soil.

This plant is distinctly different from most of our plants in that later, inconspicuous, petal-less flowers having 4 stamens appear, clustered in the axils of the upper leaves. The 5 petals and numerous stamens of the early flowers give it the general appearance of a miniature wild rose.

VIOLACEAE. Violet Family.

Viola missouriensis Greene.

Blue Violet.

"Violeta"

Low apparently stemless plants with basal clusters of simple, long stalked, triangular to heart-shaped leaves that have somewhat wavy blunt-toothed margins, prominent basal lobes and several veins at base. Flowers solitary on equally long, slender stalks, bluish-purple, irregular, with the 5 petals arranged like the cultivated Pansy. Petals 5, unequal, the lower one formed into a flat spur, whiter at the base and marked with deep purple lines, the two side ones bearded within and marked with purple lines like the lower petal. Uppermost petals curved backward. Stamens 5, hidden in the throat of the flower. Fruit a many-seeded capsule that splits in 3 parts as it dries. February, March and April. In shaded river-bottoms, often in rich soil at the base of the limestone cliffs.

Viola langloisii Greene.

White Violet.

Similar to *Viola missouriensis* but differs in that many of the leaves of this violet broaden after flowering, become broadly triangular with two long, almost divergent lobes. Others are triangular heart-shaped. Flowers white or a very pale violet, on peduncles longer than the leaves. Capsules pale yellow faintly dotted with purple. March and April. Shaded river bottoms. The cultivated pansy is a hybrid of several wild species of violets.

Calceolaria verticillata (Ortega) Kuntze.

Green Violet.

Much branched plants, with alternate, entire leaves about 1" long, and small, inconspicuous, apparently 2-lipped, purplish flowers on slender pedicels in the axils of each leaf. Stems densely covered with very short hairs. Leaves simple, alternate. Blades 1-nerved, broadly linear above, tapering at both ends. Lobes of calyx 5, as long as the upper petals. Corolla apparently 2-lipped. Lower lip, $\frac{1}{8}$ " long, at least twice as long as the upper, consisting of one greenish, violet-tipped, slightly concave petal. Seed pod small, 3-sided, 1-celled, containing about 5 seeds. Blossoms among the smallest of the simple axillary flowers. Fairly common but not noticed because of the inconspicuous flowers. Genus has its origin in the Lat. *calceolus*, tiny shoe, from the shape of the corolla.

PASSIFLORACEAE. Passion Flower Family.

Passiflora incarnata L.

Passion Flower.

Maypop.

Vine-like plants climbing by tendrils and having large, purplish fringed flowers. Leaves simple, alternate. Leaf-blades large, 2 to 6 inches broad, 3-lobed, on long petioles. Flowers lavender to purplish, showy, over 2 inches across, solitary on long stalks in the axils of the leaves. Very rare. Seen once at Brackenridge Park.

Passiflora lutea L.

Dwarf Passion Flower.

Slender-stemmed vine climbing by tendrils and having 3-lobed leaves broader than long, and fringed greenish flowers about $\frac{3}{4}$ " across. Leaves simple, alternate. Blades 2 to 5" broad, with the 3 lobes broader than long. Flowers in pairs, on slender peduncles about $\frac{3}{4}$ " long, at intervals along short, slender axillary branches of the main vine stem. Flower consists of 5 greenish sepals, a circle of 5 small, inconspicuous petals, a green fringe, and a superior ovary, tipped by 3 club-shaped styles, and having a circle of 5 stamens spreading below it. July to fall. Banks of streams and thickets. Distinguished from *Passiflora affinis* by the very broad, shallow lobes.

Passiflora affinis Engelm.

Dwarf Passion Flower.

Vines climbing by delicate tendrils and having leaves with blades broader than long (1 to 3" broad) and strongly 3-lobed. Flowers greenish, about 1 inch across, solitary in the axils of the alternate leaves and conspicuously fringed within the calyx. In the center is a stout stalk bearing a green, globular ovary fitted up like a parachute with 5 stamens radiating from its base and 3 styles radiating from the top. Fruits likewise solitary in the axils of the leaves and resembling blue balls, the size of marbles, hanging on slender pedicels, 1 to 2 inches long. Blossoms in late summer and fall. Thickets along streams. Rare.

LOASACEAE. Loasa Family.

Mentzelia nuda Torr. & Gray. "Buena mujer". Good Mother. (*Nuttallia nuda* [Pursh] Greene.) Stick-leaf. Poor-man's Patches

Pale starry flowers, gleaming ivory stems and pale, flat leaves that are so provided with many small hooked hairs that they stick to one like a good woman as the witty Mexican name implies. Leaves simple, alternate. Blades lanceolate, sparingly coarsely toothed or shallowly lobed, covered with minutely barbed hairs. Flowers golden yellow, $1\frac{1}{2}$ to 2 inches across, opening at

eventide and closing the following day. Petals 10. Stamens many, of different lengths. Fruit a cylindrical, erect capsule crowned by the 5 spreading sepals, rough like the leaves and easily dispersed by fur-bearing animals. April to July. Dry, limestone hills and rocky hillsides. Named for Mentzel, a German botanist. (A similar plant with smaller leaves, weaker stems and flowers from $\frac{1}{2}$ to $\frac{3}{4}$ " across is probably *Mentzelia oligosperma* Nutt.)

Mentzelia stricta Osterhaut.

Nuttallia stricta (Osterhaut) Greene.

Similar to *Mentzelia nuda* but petals are very pale yellow or straw-colored. In the sandy region to the south and east of San Antonio.

LYTHRACEAE. Loosestrife Family.

Lythrum lanceolatum Ell.

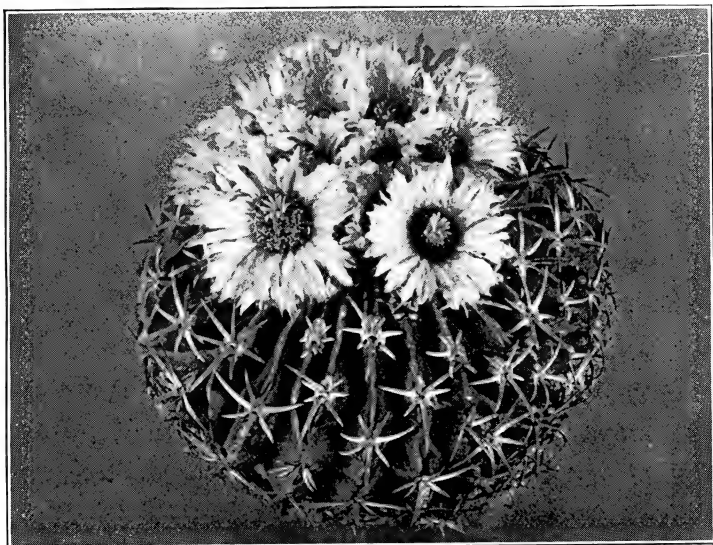
Loosestrife.

Slender stemmed, branching, leafy plants with bright purple or violet flowers that blossom up the stem (one in the axil of each leaf) as it lengthens. Leaves alternate, about 1 inch long, linear to linear-elliptic, usually folded against the stem. Flowers small, rose-purple to violet, about $\frac{1}{2}$ " across, in the axils of the numerous stem leaves. Petals 4 to 6 (usually 6), together with the sepals and stamens, united at their bases to a slender green, ribbed tube called the hypanthium. Petals usually have a dark purple mid nerve. Stamens usually 6, included in the tube. Fruit a slender, conspicuously ribbed capsule less than $\frac{1}{4}$ " long, and with 5 or 6 short teeth at the summit. April to July. In open fields.

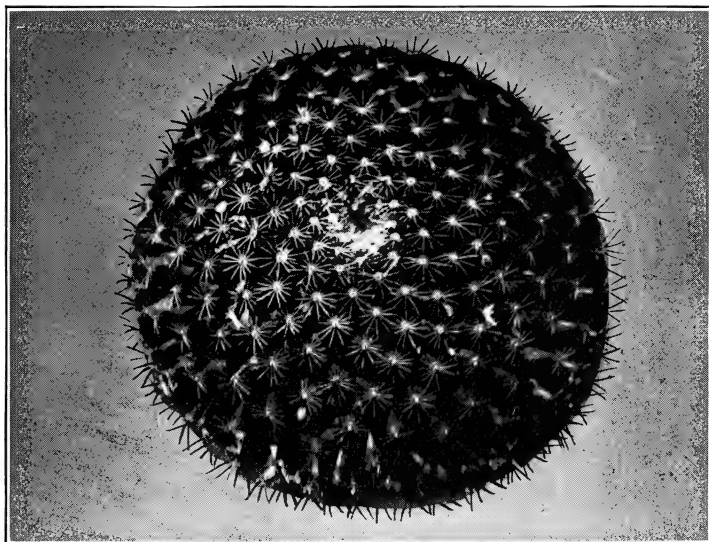
OPUNTIACEAE. Cactus Family.

Opuntia lindheimeri Engelm. Prickly Pear. "Nopal".

Cactus, 1 to 10 inches high, with large, usually vertical, flat, conspicuously jointed stems, that are generally mistaken for leaves. Each leaflike joint is one foot or less long, and is well



Devil's head cactus (*Echinocactus texensis*). The cluster of bright scarlet fruits is even more attractive than the pink blossoms. Its central spines are so strong and tough that they frequently cripple horses and cattle temporarily and readily pierce the sides of the foot of a strong shoe or boot. (Photograph by Mrs. B. Mackensen).



Devil's pin-cushion (*Mamillaria heyderi*). This species is fairly common but is rarely seen, unless a close search is made. It usually grows in the shelter of a bush or in the protection of a clump of prickly pear. Plants found in the southern sandy area invariably have less radial spines than those of the hilly regions of the north, which would lead one to believe that two species are found here.

protected through the tufts of unequal, rigid, straw-colored bristles and 1 to 4 straw colored spines, 1 to 2" long, coming out of nearly all the tufts of bristles. Flowers large, 2 to 5" across, blossoming out of the upper edge of the flat joints, and resembling big, full blown, yellow or orange-colored roses. Petals and sepals many, waxy, the inner largest and broader above the middle, the outer successively shorter and slightly greenish. Stamens numerous, yellow. Stigma with 10 green sticky lobes that spread open in the full sun like the spokes of a wheel. Blossoms open only in full sun. Joints known as leaves are important food for grazing cattle during drought seasons. The spines are burned off by a gasoline torch. An interesting account of its uses will be found in Mackensen's Trees and Shrubs of San Antonio and Vicinity. April and May. In dry soil. These plants are of interest to tourists as they may be found thriving on roofs of old buildings or cracks of old stone walks, or lodged in the crotch of some old tree. The plants are subject to a white fuzzy or cottony-covered insect, from which cochineal dye is made in Mexico. The pear "apples" are used for making candy and delicious jellies. Mr. G. Schmeltzer of San Antonio reports that a tea made from the "apples" is good for relieving one of gall stones.

Opuntia leptocaulis P. DC.

"Tasajillo."

An erect, bushy cactus, 1 to 4" tall, with thick greyish-green, fleshy stems, thickly set with green, fleshy, cylindrical finger-like branches one to several inches long, and armed with one or more treacherous, loosely sheathed spines, 1 to 2½" long, usually each spine having a tuft of short bristles at the base. Spines are difficult to remove from the flesh and cause annoying sores. Flowers inconspicuous, green or yellowish green, about ¾" across. Fruit, scarlet, about ½" long, branching out of the axil of a long sheathed spine. In spring, one to several short thick branches come out of this fruit, which then turns green and is easily broken off. These pieces take root where they fall and form new plants. May and June. In dry soil.

Echinocactus setispinus Engelm.

Hedgehog Cactus
Twisted-rib Cactus

Cactus with a thick, fleshy, globular, egg or barrel-shaped stem (2 to 4" across, 2 to 12" high) and 13 narrow oblique ribs. Ribs are wavy or bluntly toothed on margin, each lobe or tooth bearing a cluster of slender spines at its summit. Each cluster of spines has 14 to 16 radiating and spreading, bristle-like spines, and 1 to 3 slender, central, darker ones, each 1 to 1½" long. Flowers yellow, with red centers, 2 to 3" across, blossoming 1 to 6 at a time out of the center of the plant. Petals many, yellow with red bases. Stamens numerous, thread like. Stigma 10-lobed, yellow, the tips spreading over the anthers. Fruits bright coral-red. These plants blossom every few days from April to July, sometimes as late as September. The plants have the characteristic habit of growing close to the base of mesquite trunks.

Young plants up to about an inch across, are easily mistaken for another species as they do not resemble the mature plant. They are globular, with tubercles radiating in all directions, each tubercle tipped with a tuft of spines and when very young with white hairs. As the plants become older, the tubercles flatten and form the 13 ribs characteristic of the mother plant.

Echinocactus texensis Hoepf.

Devil's Head.

Spiny plants, solitary or two together, 1 to 3" above the ground, much more of it below the surface, 4 to 12 inches across, with 13 to 25 thick ribs (depending on size of plants), each rib bearing 1 or 2 clusters of spines. Each cluster consists of 7 stout, pinkish thorns, the central one by far the largest and curving away from the central axis, the other six radiating and spreading. Flowers delicate pink or yellowish-rose, frilled at the tips of the petals, shading to deeper pink or red in the cup, which is set in a densely woolly involucre consisting of many rows of slender, reddish, spine-tipped bracts. Stamens numerous, with threadlike filaments and very small inconspicuous stamens. Stigma orange

or pinkish, with 10 lobes spreading over and above the stamens in bright sunlight. Fruits large, extremely ornamental, remaining a bright scarlet for several months, and easily eclipsing the blossoms in beauty. April. In dry soil. Widespread, but not common.

Mamillaria heyderi Muhlenpf. Devil's Pin Cushion.
(*Cactus heyderi* [Muhlenpf.] Kuntze.)

Plants 1 to 3" high, nearly globular, 1 to 4" in diameter, the surface covered with teat-shaped, 4-angled tubercles, each of which bears about 10 to 22 white, radiating bristles and a central, solitary, stout, short, nearly straight spine. Flowers small, about $\frac{1}{2}$ " across, white or tinged with violet, blossoming one to several at a time between the teat-like projections near the center of the crown. Rare here. Fairly common in the sandy country to the south. Blossoms continuously from late February to April.

**Mamillaria missouriensis* Sweet. Devil's Fingers. Nipple Cactus.
(*Cactus missouriensis* Kuntze.)

Cactus similar to *Cactus heyderi* but the tubercles are fewer, cylindrical, larger, longer and coarser, and are crowned by fewer (usually a dozen), longer, stouter, radiating bristles and a stouter central spine about $\frac{1}{2}$ " long. Flowers larger, $1\frac{1}{2}$ to $2\frac{1}{2}$ " across, brilliant orange, similar in general appearance to the blossoms of *Echinocactus setispinus*. These plants as well as *Mamillaria heyderi* have the habit of drawing themselves into the ground thus presenting only a very limited surface to the sun. Blossoms at intervals from April to July. Very rare.

Echinocereus caespitosus Engelm. & Gray. Classen's Cactus.
(*Echinocereus reichenbachianus*)

Bristly spiny, cylindrical cactus, solitary or growing in clumps up to 7 individuals, each 2 to 3" in diameter, 2 to 6" high. Ribs 10 to 15, with a dense row of radially centered, weak, white spines growing on the crest, giving the cactus a scaly appearance.

* Possibly *Mamillaria weismanii* or some other species.

Flowers shell pink to deep pink, $2\frac{1}{2}$ to 3 inches across, opening and closing with the sun, lasting several days, and blossoming singly or a few at a time out of the tops of thick, fleshy stems. Petals many, in several rows, coming out of a thick, green, fleshy, spiny cup. Within this circle of petals are innumerable yellow stamens and in the center is the 10-rayed stigma. A very ornamental cactus. March and April. In rich soil, on dry, rocky hills and hillsides.

ONAGRACEAE. Evening Primrose Family.

EPILOBIACEAE. Evening Primrose Family. In Small's Flora.

Isnardia natans (Ell.) Small
(*Ludwigia natans* Ell)

Marsh Purslane.

Smooth-stemmed, creeping or floating plants with 4 minute, inconspicuous petals crowning a short ovary, one in the axil of each leaf. Leaves simple, opposite. Blades 1 to $1\frac{1}{4}$ inches long, broader above and tapering toward the base. Fruit a short, 4-sided, inversely pyramidal capsule, about one-eighth inch long. Spring to fall. Rooting in mud or floating in shallow water.

Jussiaea diffusa Forskl.

Floating Evening-primrose.

Floating or creeping plants with showy, yellow, 4 or 5-petaled flowers, about 1 inch across, solitary in the axils of the leaves. Leaves simple, alternate. Blades entire, oblong, oval to wedge-shaped, 1 to 3" long. Petals 4 or 5, large, crowning a long, tubular ovary. Stamens 10. Pod woody, oblong or club-shaped, $1\frac{1}{2}$ to 3 inches long, the body narrowed into a pedicel-like base. April to fall. Creeping in mud or floating in shallow water. Flowers close at sundown.

Jussiaea suffruticosa L .

Willow-leaved Evening-primrose.

Much branched green plant, 1 to 4 feet high, with showy, yellow, 4-petaled flowers, growing on moist banks of streams. Leaf-blades narrowly oblong or lanceolate, 2 to 6" long, tapering, entire, short-petioled, strongly resembling Smartweed. Flowers

about $1\frac{1}{2}$ inch across, solitary in the axils of the leaves. Petals 4, $\frac{3}{4}$ to 1" broad, shallowly notched at the apex. Stamens 8. Fruit a cylindrical, 4-sided capsule, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, crowned by 4 leaflike sepals. June, July and August. Petals fall off readily.

Oenothera laciniata grandis Britton. Yellow Evening Primrose.
(*Oenothera sinuata grandiflora* Heller.)

Plant erect when young, branching and spreading later and bearing large, showy, bright yellow 4-petalled flowers that open in the early evening. Upper leaves simple, alternate. Blades oval, oblong, lanceolate or spatulate, 2 to 4 inches long, wavy or variously lobed along the margins. Flowers 2 to 3 inches across, solitary in the axils of the upper leaves, a few opening each day at sundown and closing the following day. Petals 4, thin, broad, united at their bases to a narrow tube (hypanthium) about 2" long. Stamens 8. Stigma divided into 4 linear lobes. Fruit 1 to $1\frac{1}{4}$ " long, 4-sided, and when dry splits from the top into 4 parts. March and April. In sandy soil.

Oenothera laciniata Hill.
(*Oenothera sinuata* L.)

Similar to *Oenothera grandis* but corolla smaller, $\frac{1}{2}$ to $1\frac{1}{2}$ " across, leaves small, 1 to 2" long, plants not as tall, ranging from 3 to 20". March to July. In sandy soil.

Lavauxia triloba (Nutt.) Spach. Yellow Evening Primrose.
(*Oenothera triloba* Nutt.)

These great evening primroses are like lamps lit at dusk or for a while on misty mornings. They are apparently stemless plants with mammoth bright yellow flowers coming out of a tuft of leaves, 3 to 8 inches long, with wavy, coarsely toothed or segmented margins, strongly resembling the well known dandelion of the north and east. Petals 4, large, flaring out of a narrow tube, 2 to 3 inches long. Stamens 8. Fruit a strongly, 4-winged capsule, $\frac{1}{2}$ to 1" long, not as broad, buried deep in the

rosette of leaves. March and April. Wrongly called "Buttercups". Widespread, adding beauty to every vacant lot, roadside and pasture. Named for de Lavaux, a French botanist.

Megapterium missouriense (Sims) Spach.

Yellow Evening Primrose.

This primrose of the limestone hills is even larger and more conspicuous than the preceding ones, both in flower and in the large, broad, leathery, winged capsules that turn reddish-purple with age. Leaves simple, alternate. Leaf-blades thick, narrow, 2 to 6 inches long, usually entire, and like the stalks usually stained with red or purple. Flowers large, yellow, 3 to 5 inches across. Petals 4, flaring out of a long, narrow, yellow tube, 3 to 6 inches long. Stamens 8. Stigma 4-lobed, tipping the long, threadlike style. March to June. Blossoms open in the evening, close the following day, and after hanging withered for a day or two, drop off.

Meriolix serrulata (Nutt.) Walp.

Yellow Evening-primrose.

"Buttercups".

Plants 1 to 2 feet tall similar to the above evening primroses but having flowers only about 1 inch across, a disk-like stigma, narrow, oblong capsules less than 1 inch long, and erect, pale, shiny, brittle, woody, usually much branched stems. Leaves simple, alternate. Blades linear to spatulate, usually sparingly toothed above the middle, 1 to 2 inches long. Petals 4, yellow, ($\frac{3}{8}$ to $\frac{1}{2}$ " long), united at their bases. Stamens 8, of two lengths. April to July. Open in the bright sun. Dry, rocky hillsides and deep ravines. The disk-like stigma of these plants is often black.

Meriolix spinulosa (Torr. & Gray) Heller.

Similar to *Meriolix serrulata* but having larger flowers ($1\frac{1}{4}$ to $1\frac{3}{4}$ inches across), and longer capsules ($\frac{3}{4}$ to $1\frac{1}{4}$ inches). Leaves similarly toothed and narrow. April to July. Dry rocky hillsides. I am unable to find any permanent characteristics

which distinguish this species from *M. serrulata* or *M. melanoglottis*.

Meriolix melanoglottis Rydb.

Easter Flower.

Similar to *Meriolix serrulata* but having its stigma and inside of the cup or only the latter stained with brownish-purple or black. One of our most attractive flowers of the rocky hill-tops, hillsides and ledges. April to July. Common name given through the black centers being used as dye for Easter eggs.

Galpinsia tubicula (A. Gray) Small. Dwarf Evening Primrose. (*Oenothera tubicula* A. Gray.)

Similar to *Meriolix serrulata* but not as tall (4 to 10" high) and more branched. Leaves $\frac{1}{2}$ to 1" long. The 8 stamens are equal in length. Stigma entire, never slightly 4-toothed. Capsules less than $\frac{3}{4}$ " long. In sand to the south and east. March to June.

Hartmannia speciosa (Nutt.) Small.

White or Pink Evening Primrose. "Primula".

Large, wide-open delicate flowers, 2 to 3 inches across, with 4 pure white varying to deep pink, diaphanous petals shading into greenish-yellow at base. Stamens 8, with long, white filaments and yellow anthers containing pollen held together by cobwebby threads. Style long, threadlike, terminating in a long 4-lobed stigma. Young buds nodding, becoming erect with age. Fruit club-shaped, less than $\frac{1}{2}$ " long, 4-winged, in the axils of the upper leaves. Leaves simple, alternate. Blades 2 to 4 inches long, variously cut along the margin into narrow lobes. Plants usually branch at the root and form large patches of strikingly conspicuous white or pink blossoms. These flowers open in the evening but differ from most of the evening primrose family in that the blossoms remain open all day even in the full sun. This and other species are often cultivated as "Mexican primrose".

Hartmannia tetraptera (Cav.) Small. Pink Evening Primrose.

Similar to *Hartmannia speciosa* in habit and general appear-

ance but having purple or rose-purple petals, smaller flowers ($1\frac{1}{2}$ to $2\frac{1}{2}$ inches across), and club-shaped and longer fruits (1 to $1\frac{1}{2}$ inches). Not as common as *Hartmannia speciosa*.

Hartmannia rosea (Ait.) G. Don.

"Amapola".

Evening Primrose.

Similar to *Hartmannia speciosa* but blades of leaves shorter (1 to $2\frac{1}{4}$ "), flowers deep pink or purple, $\frac{3}{4}$ to 1" across, and capsules club-shaped, $\frac{1}{2}$ to $\frac{3}{4}$ " long, the body 4-angled and shorter than the long pedicel-like base.

Gaura parviflora Dougl.

Wild Honeysuckle.

Velvet-leaf Gaura.

Tall, simple stemmed, velvety leaved plants widely branching above, each branch ending in a pink to rose-colored, weak and slender spike, usually with a drooping tip. Leaves simple, alternate. Blades ovate-lanceolate, entire or sparingly toothed, soft-velvety, $1\frac{1}{2}$ to 3" long. Petals 4, minute. Stamens 8. Stigma 4-lobed. Fruit slender pods about $\frac{1}{4}$ " long, tapering at both ends and forming up the spike as it lengthens and forms new blossoms. May to late summer. Along roadsides and in pastures. These plants grow shoulder tall in wet seasons.

Gaura suffulta Engelm.

Bee Blossom.

Wild Honeysuckle. Kisses.

Hairy plants, 1 to 3 feet tall, sparingly branched at the base, and fragrant with long racemes of fresh white flowers about $\frac{3}{4}$ " across that open a few each evening about 1" below the tip and turn deep pink or scarlet the following day. Petals 4, always erect, about $\frac{3}{8}$ " long, white, narrowed at the base. Stamens 8, spreading downward, conspicuous. Fruit a 4-angled pod, less than $\frac{1}{4}$ " long, broad at base and tapering rapidly toward the tip, and forming up the ever lengthening spire below the blossoms. Leaf-blades broadly linear to spatulate, wavy or sparingly and shallowly toothed, 1 to $2\frac{1}{2}$ " long, usually on the crowded lower third of the plant, the upper two-thirds being the slender naked stem on which the flowers form.

Gaura drummondii Torr. & Gray.

Bee Blossom.

Wild Honeysuckle.

Leafy plants, 6 to 18 inches tall, with greyish stems and buds, and fragrant scarlet flowers crowded along the spikes that are merely leafless continuations of the many branches. Stem leaves simple, alternate. Blades $\frac{3}{4}$ to $1\frac{1}{2}$ " long, broadly linear to lanceolate, usually with sparingly toothed and wavy margins. Flowers similar to *Gaura suffulta* only more crowded. Petals 4, scarlet or red. Fruit similar but with short necklike base (neck shorter than the body) and covered with short, fine, silvery-gray hairs. Braets on spike falling early. March to May. Grows in patches, showing a preference to well drained soil. The very delicate fragrance of the blossoms gives it one of its common names.

Gaura sinuata Nutt.

Plants similar to *Gaura suffulta* but the leaves are longer and more crowded on the lower 6 to 10", spikes more slender, leaf blades wavy, often segmented with triangular segments, much narrower, fruit longer (5 to 7 mm), not wing-angled but 4-ridged and 4-grooved and more slender. The stems and leaves are often purplish. March to July. Dry hillsides. Not common.

Gaura brachycarpa Small.

Similar to *Gaura suffulta* but buds are finely pubescent (not glabrous), leaves generally narrower and not as long, and fruit pyramidal, ovoid or oval-ovoid, 4-angled and slightly larger (5-7mm) and far apart on the stems. March to May. In sandy soil.

CORNACEAE. Dogwood Family.

NYSSACEAE. Dogwood Family. In Small's Flora.

Cornus asperifolia Michx.

Dogwood.

(*Svida asperifolia* [Michx.] Small.)

Shrub with reddish-brown twigs, clusters (1 to 2" across) of small, white flowers, followed by clusters of white, one-seeded

stone fruits the size of peas. Leaves simple, not toothed, opposite. Blades oval to ovate, 1 to 5" long, long pointed, conspicuously heavy-veined beneath. Petals 4, small. Stamens 4. In low, rich river bottoms. March and April.

APIACEAE. Parsley Family.

AMMIACEAE. Carrot Family. In Small's Flora.

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Hydrocotyle verticillata Thunb.
(*Hydrocotyle interrupta* Muhl.)

Marsh Pennywort
Water Pennywort.
Cupid's Table.

This is the plant with round, glossy leaves with the leaf stalks coming directly out of the mud and united to the blade in the center of each. Flowers minute, in tiny whorls at intervals

along simple flower stalks similarly rising out of the mud and usually hidden under the umbrella-like leaves. Petals 5. Stamens 5. Seed cases small, flat, ribbed, broader than long. Plants creep and spread by slender underground stems. Always rooted in moist soil or mud, sometimes in shallow water often filling shallow ditches and creek beds. The petioles of these leaves vary in length depending on the depth of the water. I have seen some fully 2' long. Children play a game with the leaves called "Dimes, nickels and dollars."

Bowlesia septentrionalis Coult. & Rose.

Rabbit Lettuce.

A common lawn weed with weak stems and simple, opposite leaves broader than long, about 1 inch wide and $\frac{1}{4}$ to $\frac{1}{2}$ " long, and usually 5-lobed with the lateral lobes frequently slightly incised. Flowers inconspicuous; minute, yellowish, single or in small globular clusters almost buried in the axils of the leaves. Petals 5, minute. Seed cases small, broader than long, strongly 2-lobed, covered with star-shaped hairs (use lens). Plant is one of the the earliest annuals and in January and February grows singly or forms a thick green mat over large areas of waste ground. In late summer the prostrate branches get 6 to 18" long, and thread grass and weeds. Forms an excellent forage for rabbits. Often mistaken for sour grass.

Eryngium leavenworthii Torr. & Gray.

Eryngo.

Button Snake-root.

Leafy, thistle-like plants, the stems tipped with bright purple, globular or oblong flower heads each crowned with 3 or 4 leaf-like, spiny bracts that come straight out of the middle of the top. Leaves usually palmately 3-parted, each lobe having several spiny teeth. Late summer and fall. Rare.

Chaerophyllum dasycarpum Coult. & Rose.

Chervil.

Queen Anne's Lace.

(*Chaerophyllum tainturieri* var *dasycarpum* [Nutt.] Hook.)

Slender, erect or somewhat weak-stemmed plants with

feathery, fernlike foliage and small white flowers clustered at the ends of very slender, axillary stalks. Leaves once or twice pinnately compound or simple and finely dissected. Leaflets much cut and divided. Corolla minute, white, 5-lobed, crowning the oblong seed cases. Fruits slender, oblong, 2-lobed, less than $\frac{1}{2}$ " long, in small clusters at the ends of slender, axillary stalks. February, March and April. Widespread.

Phanerotaenia texana (Coult. & Rose) St. John.
(*Polytaenia nuttallii texana* Coult. & Rose.)

Plants 1 to 3 feet high, with thick, finely grooved stems, large twice compound leaves, the segments broader than any of the other members of the parsley family, wedge-shaped at base, toothed above or with one or few lateral toothed lobes. Leaf stem expanded at base into a membranous, often purplish sheath. Upper part of the stem with opposite, 3-lobed or 3-divided, toothed, wedge-shaped bracts, a flower cluster branching out of the axil of each bract. Flowers yellow or yellowish-green, small, in small umbels which are united by short stalks into a much broader compound umbel. Petals small, obovate, notched, yellowish-green. Fruit ripe in midsummer. Fruits flat, about $\frac{1}{4}$ " long, elliptic, 3 to 5 ridged on each side, the wings thick and pale. The thick stems of this plant often turn purplish in fruit. May and June. In shaded soil. Not common. This is the largest, most coarse-stemmed and biggest leaved member of the carrot family in Bexar County.

Ptilimnium nuttallii (DC.) Britton.

Laceflower.

Plants with ribbed stems, feathery or much dissected foliage, and small clusters (about $\frac{1}{2}$ " across) of white 5-lobed flowers, these clusters united by stalks about 1" long into a larger flat-topped cluster (1 to 2" across). Segments of the finely dissected leaves no wider than the midrib. Flowers $\frac{1}{4}$ " across. Petals 5, deeply 2-lobed, the lobes overlapping slightly on the inner margins giving the petal the appearance of having a hole the size

of a pin head in the middle of each. Fruits strongly 2-lobed, broader than long. Sometimes confused with *Chaerophyllum* but differs in the strongly ribbed and never hairy stems, glabrous and darker green foliage, flowers at least 4 times as large across (these $3/16$ to $1/4$ "), the smaller clusters always united by long stalks into a larger cluster, and the short, broad, strongly 2-lobed seed cases. Begins to blossom later than *Chaerophyllum*. April to July. Widespread.

Ptilimnium laciniatum (Engelm. & Gray) Kuntze.

July Lace-flower.

Late blossoming plants, 1 to 3 feet tall, with a "carrot" odor and small white 5-petaled flowers clustered in flat-topped, compound umbels 1 to $2\frac{1}{2}$ " across, at the ends of the comparatively few, deep green, grooved branches. Leaves once or twice pinnately compound, the upper clasping, the lower petioled. Leaflets mostly wedge-shaped, the segments few. Rays of the umbel 5 to 10, $1/2$ to 1" long. Petals broadest above the middle, about $1/12$ " across, notched and inflexed at the top. Fruits longer than broad, flattened, strongly ribbed.

Plant resembles *Ptilimnium nuttallii* in general appearance but blossoms later (June, July and August), has broader leaflets, fruits are not so deeply 2-lobed, stems simple at the base, tap root prominent, and plant as a whole, taller and not as spreading.

Ptilimnium capillaceum (Michx.) Hollick.
(*Discopleura capillacea* DC.)

Bishop Weed

A feathery, fernlike plant, 8 to 16 inches high, similar to Chervil but having smooth stems and much smaller, greenish flowers. Leaves pinnately compound, alternate. Leaflets finely dissected, the segments slender and narrow (*Chaerophyllum* has broader segments). Flowers minute, white, in clusters, these clusters united into still larger clusters. Petals 5, minute, deeply notched at apex. Seed-cases 2-lobed, fruits somewhat flattened,

minute, strongly ribbed, usually tipped with 2 spreading or recurving styles. March and April. In low moist places, railroad tracks, roadsides and river bottoms.

Spermolepis echinatus (Nutt.) Heller.

Plant, 2 to 12" high, with repeatedly forked branches, leaf blades dissected into very narrow segments (no wider than a midrib), and minute white flowers in compound umbels, terminating long, slender, leafless, axillary peduncles. Easily confused with *Ptilimnium capillaceum* but differs in the repeatedly forked branching and the small ribbed fruits being covered with short, white, hooked bristles. March to May. In sandy soil.

Ammoselinum popei Torr. & Gray.

Sand Parsley.

Repeatedly forked branched plants, with ternately dissected compound leaflets, minute white flowers, and spiny-ribbed seed cases. Seed cases about $\frac{1}{8}$ " long, flattened, 2-lobed, with 5 minutely spiny ribs on each lobe. In sand. February to March.

Daucus pusillus Michx.

Wild Carrot.

Bird's Nest.

Queen Anne's Lace.

This bristly-hairy, single-stemmed, erect, perennial relative of our true carrot has a deep conical root. Foliage fringing and fern-like, the leaves occurring only at intervals on the stem. Flowers tiny, white, 5-parted, densely clustered in small, flat wheels that are again grouped into a flat-topped disk 2 to 3 inches across. The common name Queen Anne's Lace is very descriptive of this fleecy, lace-like design of the flowers. Fruits so bristly that they catch in clothing giving rise to the name Beggar's Ticks. As the bristly seed cases ripen, the floral disk curves upward, forming a hollowed nest, giving it another of its popular names. March to May. A common weed.

PRIMULACEAE. Primrose Family.

Samolus cuneatus Small.

Water Pimpernel.

Brookweed

Plants of wet limestone ledges or margins of spring fed

creeks. Slender spires of small white flowers blossom out of the thick, leafy lower half of the plants. Lower stem leaves spatulate, entire, rounded at the tips, often spoon-shaped, 1 to 3 inches long, the blade continuing as wings on the petiole from $\frac{1}{2}$ to 2 inches. Upper stem leaves similar to basal leaves but with clasping base. Flowers small, white, $\frac{3}{16}$ " across, solitary on slender, threadlike, ascending pedicels that branch out of the leafless, slender upper branches. Corolla 5-lobed. Stamens 5, inconspicuous. March to late summer.

Samolus floribundus H. B. K. Water Pimpernel. Brookweed.

Similar to the preceding species in general appearance of the flowers but flowers are more numerous, much smaller, less than $\frac{1}{8}$ " across, the racemes shorter and coming out of nearly all of the axils of the upper leaves. Leaves similarly clustered at base but not as large. Stem leaves without clasping base, ($\frac{1}{4}$ to $1\frac{1}{4}$ inches long), oval or spatulate. Differs also in the absence of minute glands along the flower stem and on the calyx. March to July. In mud and moist soil along creeks or on wet limestone ledges.

Anagallis arvensis L.

Shepherd's Weather-glass
Scarlet Pimpernel.

Annuals with weak, 4-sided, smooth stems (grooved on the two narrower sides), opposite simple leaves, and small, scarlet flowers ($\frac{3}{8}$ " across), solitary on threadlike axillary pedicels. Leaves simple, opposite. Blades broadly ovate to oval, entire, sessile, about $\frac{1}{2}$ " long, often nearly as broad, and having more than 1 vein at base. Sepals 5, membraneous margined, narrow. Petals 5, scarlet, purplish at base. Stamens 5. Filaments slender, purple, usually covered with white hairs at the base. Pods the size of small peas, splitting into 5 parts, and containing numerous, small, granular seeds. Waste places. March, April and May. Not common.

SAPOTACEAE. Sapodilla Family.

Bumelia lanuginosa (Michx.) Pers. Gum Elastic. Shittim Wood.

Thorny shrub (sometimes a tree), with short stiff branches ending in thorns that are almost hidden in the clustered leaves and thick bunches of small greenish or white flowers at close intervals on the woody stems. Leaves simple, often clustered on short spurs. Blades wedge-shaped or broadest above the middle, not toothed, glossy green above, paler and often rusty-woolly beneath, 1 to 3" long. Flowers 5-lobed, small, fragrant, in compact clusters 1 to 1½" across. Stamens 5. Fruit resembles a small, black cherry. May. Riverbottoms and rocky hillsides.

EBENACEAE. Ebony Family.

Brayodendron texanum (Scheele) Small. Mexican persimmon.

"Chapote." "Nespala". 'Possum Plums.

Small trees or shrubs with smooth gray bark, small dark green leaves and small, nodding, white, bell-shaped flowers scattered along the branches. Leaf-blades wedge-shaped to oblong, dark green, almost stalkless, ½ to 2" long. Corolla urn-shaped, resembling that of the cultivated lily of the valley, with 5 broad recurving lobes, white turning brown with age. Flowers of 2 kinds, the pistillate being larger than the staminate and on separate plants. Fruit a black, sweet, juicy, edible, globular berry, the size of a marble, ripening from July to fall. Blossoms in March and April. Widespread, growing in every type of locality. Eaten by coons and opossums and relished equally well by man. Mr. G. Schmeltzer of San Antonio reports that a tea made of the inner (white) bark is used for chills and fever. One tablespoonful of bark is steeped in about six cups of water.

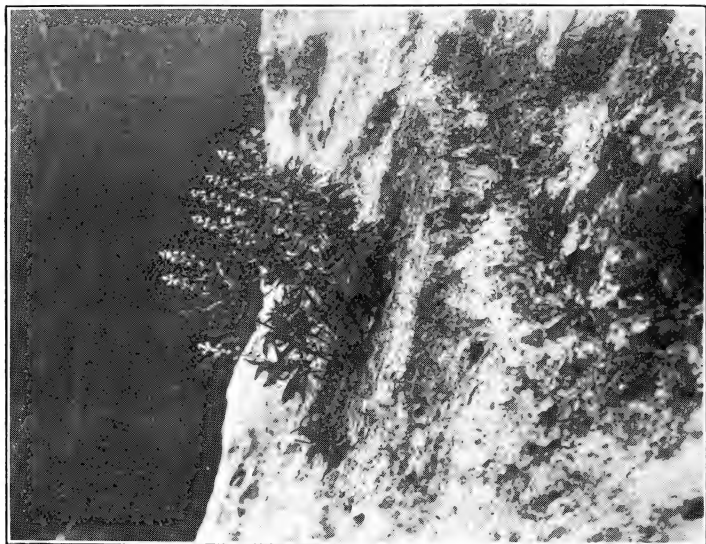
OLEACEAE. Olive family.

Menodora heterophylla Moric. Red-bud. Menodora.

Low spreading leafy plants with red buds, yellow flowers about ¾" across and cunning little, white balloon fruits. Leaves



White evening primrose (*Hartmannia speciosa*). The evening primrose family has sixteen representatives in this county, and everyone does more than its share in brightening up the roadsides and uncultivated fields. (Photo by Dr. Elton Perry).



Buddleia racemosa. This plant, like *Laphamia*, has the unusual habit of growing out of pockets and cracks of limestone bluffs.

simple, opposite, sometimes alternate. Uppermost blades entire, others cut into 3 to 7 lobes. Buds red. Petals 5 or 6, yellow within, three partly red on the under side. Stamens 2, sometimes 3. Pods round like peas, in pairs, and opening by a lid. March to November. In lawns, along the roads and in pastures.

Forestiera pubescens Nutt.

Spring Heralds.

(*Adelia pubescens* [Nutt.] Kuntze.)

Spring Golden Glow.

Wide-branching shrub with yellow flowers appearing before the leaves in January and February in tiny clusters along the branchlets of the preceding year. Flowers are staminate and pistillate on separate bushes. Staminate blossoms conspicuous, consisting of clusters of many tiny yellow stamens of several lengths, in a shallow cup of 4 or 5 small, flat, broad often reddish sepals. Petals none. Pistillate blossoms inconspicuous, usually noticed in an advanced stage of development, where one finds several pistils (usually 5) in a cluster each on a hairy pedicel about $\frac{1}{2}$ " long. At the base of the pistils is a ring of usually 5 minute stamens. Fruit clusters of small, oblong, blue drupes, ripening in early summer. Leaves simple, opposite. Prefers shaded, rocky ground, forming much of the underbush in some localities, due to the wide-spreading habit of its many branches. One of the first shrubs to bloom in early spring.

LOGANIACEAE. Logania Family.

SPIGELIACEAE. Logania Family. In Small's Flora.

Cynoctonum mitreola (L.) Britton.

Mitrewort.

(*Mitreola petiolata* [Walt.] Torr. & Gray.)

Pale green, fleshy leaved plants, 6 to 18 inches tall, with small white flowers in elongated clusters coiled at the ends like a scorpion's tail, and growing in mud or very moist banks of ponds and streams. Stems fleshy, simple or branched at base. Leaves simple, opposite. Blades 1 to 3" long, entire, linear to oblong, the lower oblanceolate. Corolla 5-lobed, less than one-eighth inch across. May, June and July.

Buddleia racemosa Torr.

Shrubby plants with small, ball-like clusters of inconspicuous, white or yellowish flowers growing in pairs along the ends of the many branches and similar to *Laphamia lindheimeri* in the habit of growing out of cracks and crevices of vertical limestone walls. Leaves simple, opposite. Blades 1 to 2" long, ovate-oblong to lanceolate, coarsely and bluntly toothed, green above, paler and veiny below. Calyx small, whitish, 4-lobed, scurfy. Corolla white or yellowish, minute, 4-lobed. Stamens 4 or 5, inconspicuous. May to fall.

Polypreum procumbens L.

Low, tufted plants, 2 to 8" high, with repeated forked branching, wiry, 4-angled stems, small, opposite, narrow leaves and small, white flowers, solitary and sessile in the forks of the branchlets or in the axils of the uppermost leaves. Leaf-blades linear, 1" or less long, sessile, the margins often rolled back. Corolla white, 4 or 5-lobed, about $\frac{1}{8}$ " across. Calyx lobes 4 or 5, linear, exceeding the corolla. Capsules very small, 2-lobed, containing many seeds. March to July. In sandy soil to the south of San Antonio, also, rarely in stony, dry creek bottoms of the Edwards Plateau.

GENTIANACEAE. Gentian Family.

Erythraea calycosa Buckl.

Centaury.

Grass-pinks.

Star Flower.

This rosy gentian is an erect plant, 4 to 10 inches high, with repeated forked branching, opposite leaves, and starry, deep pink or true purple flowers about $\frac{1}{2}$ " across. Leaves simple, opposite. Blades linear to oblong, $\frac{1}{2}$ to 1 inch long. Flowers in the forks of the branches or in the axils of the upper leaves. Petals 5, joined at base into a narrow tube. Stamens 5, with spirally twisting anthers. A very pretty plant growing singly or in small patches in moist fields, along the road or in a bit of rich soil on limestone hills and hillsides of the Edwards Plateau.

April to July. This is the more common of the two species given. Rarely a white-flowered form is found.

Erythraea beyrichii Torr. & Gray. Mountain Pink. Centaury.

Similar to *Erythraea calycosa* but more intricately forked and bushy, flowers more numerous, always blossoming at the tips of the many forked branches. Corolla lobes acute (not blunt). Blossoms later (July and August). Foliage usually a paler green. Rare here, found only in that portion of the country which is made up of the Edwards Plateau. This is one of the prettiest and showiest flowers of the bare limestone hills, forming patches of color seen at a fairly long distance. Especially desirable for bouquets because of their lasting qualities.

Sabbatia campestris Nutt. Texas Star. Meadow Pinks.

Similar to *Erythraea calycosa* but plants are more widely branched, leaves broader at base and larger, calyx lobes narrow and longer than the corolla lobes. Flowers larger (over 1 inch across), with conspicuous yellow centers and coiled anthers (never twisted). Fruits rounded, set in a cup crowned with the 5 pointed spreading calyx lobes and a second ring of the 5 dried corolla lobes. In moist meadows and roadsides. March to June. Not common.

Eustoma russellianum (Hook.) Griseb. Bluebells.
Blue Gentian. Eustoma.

These plants are always covered with a bloom and have the largest blue flowers in this county. Stems erect, 1 to 2 feet tall, smooth, simple or sparingly branched at the root. Leaves simple, entire, ovate to oblong or lanceolate, partly clasping, and arranged in alternating opposite pairs at intervals along the stem. Flowers large, blue or violet, 1½ to 2 inches long, open bell-shaped, blossoming a few at a time at the top of the plant. Stamens 5. Stigma 2-lobed. These do well for "cut" flowers as they will last from one to two weeks. June and July. In low wet ground in meadows or close to swampy places.

APOCYNACEAE. Dogbane Family.

Amsonia texana (A. Gray) Heller.

Texas Star.

Erect plants 1 to 2 feet high, leafy to the top and terminating in flat-topped clusters of pale blue flowers. Plants usually branched at the woody root. Leaves simple, narrow, 1 to 2" long, crowded along the stems. Corolla tubular, 5-lobed, about $\frac{1}{2}$ " across. Stamens 5, inconspicuous. Pods 2 together, erect, slender, glabrous, 2 to 4 inches long. April and May. On dry limestone hills of the Edwards Plateau. Not common. Named for Amson, an American physician.

ASCLEPIADACEAE. Milkweed Family.

Asclepias verticillata L.

Milkweed.

Tall, slender stemmed plants rarely branched at base and having milky sap and greenish-white clusters of odd flowers about 1 inch across at intervals along the upper part of the simple stems. Leaves narrow, 1 to $2\frac{1}{2}$ inches long, opposite, scattered or in whorls of 3 to 6. Flowers irregular, having 5 concave hoods. Pods slender, $2\frac{1}{2}$ to 4 inches long, splitting on one side and freeing numerous flat, brown seeds, each with a tuft of silky hairs at one end. June to September. In poor, dry soil.

Asclepias linearis Scheele.

Milkweed.

Similar to the above but usually branched at base and leaves not in whorls. Blossoms in May and June.

Asclepias texana Heller.

Texas Milkweed.

Smooth, leafy, slender-stemmed plants with milky sap, stems commonly 2 to 3-branched at the fibrous roots, and flowers as in the two preceding species, only whiter. Leaves simple, opposite. Blades thin, oval-oblong, 1 to 2" long. Petioles $\frac{1}{2}$ to $1\frac{1}{2}$ " long. May to July. In rich, shaded ground in the Edward's Plateau Region. Named for *Asklepios*, the Greek God of medicine.

Acerates viridiflora (Raf.) Eaton.

Milkweed.

A tall, simple-stemmed species with flowers similar to the preceding but with broad, leathery, usually opposite, short-petioled leaves, $1\frac{1}{2}$ to $2\frac{1}{4}$ " long and with blunt or notched tips. July and August. Not common.

Asclepias lindheimeri Engelm.

(*Podostemma lindheimeri* [Engelm.] Greene.)

Plants with milky sap and one to several stout reclining stems coming from the same root. Leaves simple, alternating in pairs along the thick stems. Blades 2 to $3\frac{1}{2}$ " long, oblong or oval or oblong oval, thick, toothless, blunt-tipped. Flowers few to several in the axils of the upper leaves, similar to the above milkweeds in general structure, the individual flowers having long, erect hoods, slightly less than three-eighths long, and reflexed greenish corolla lobes equally as long as the hoods. Calyx lobes very small, about $\frac{1}{8}$ " long. Hoods twice the height of the anthers. Pods similar to the above milkweeds. Not common.

Asclepiodora decumbens (Nutt.) A. Gray.

Antelope Horns.

Plants with many branches spreading radially from a common woody root, each branch ending in a rounded, greenish-yellow flower cluster, $2\frac{1}{2}$ to 3" across. Flowers queer, saucer-shaped, about $\frac{1}{2}$ " across, with greenish lobes and purplish hoods. Sepals 5, small. Petals 5, larger than the sepals, broader, greenish and spreading. Leaves simple, alternate, 2 to 6" long, lanceolate, 1 main vein at base, and tapering into a long, narrow tip. Pods similar to any of the milkweeds, splitting on one side and containing many flat brown seeds each with a tuft of silky hairs at one end. April and May. On dry, rocky hillsides of the Edward's Plateau.

Asclepiodora viridis (Walt.) A. Gray.

Antelope Horns.

Green Milkweed.

Similar to the preceding species but flowers are in 2 or 3 clusters at the ends of the many branches. Rare.

Vincetoxicum reticulatum (Engelm.) Heller. Pearl Milkweed.
(*Gonolobus reticulatus* Engelm.)

Hairy, twining vine with milky juice and green flowers. Leaves simple, opposite. Blades heart-shaped, 3-nerved at base. Flowers green, in clusters on long stalks that come out of the axils of the leaves. Corolla 5-lobed, green with a network of purplish veins, and having a raised silvery crown in the center, resembling a pearl. Pods characteristic of the milkweeds. April to fall. Climbing over bushes and up trees in shady places and ravines.

Vincetoxicum biflorum (Raf.) Heller. Star Milkweed.

Densely hairy plants with branches lying on the ground, opposite heart-shaped leaves, and one or two, deep red-purple, star-like flowers in the axils of each pair of leaves. Leaves simple, opposite. Blades broadly ovate, densely hairy, with heart-shaped base, blunt tips, heavily veined underneath and more than 1 vein at base. Corolla $\frac{1}{2}$ to $\frac{3}{4}$ " across, 5-lobed, deep purplish red, conspicuously hairy above, green and hairy underneath. Pods similar to all milkweeds. Plant also has the characteristic disagreeable odor. March to June. Dry rocky soil.

Philibertella cyanchoides (Deene.) Vail. Climbing Milkweed.

A climbing plant with milky sap, opposite heart-shaped leaves and white flowers in clusters about 1 inch across and similar to the preceding milkweed blossoms (except *Vincetoxicum*) in structure and general appearances. Pods similar to all milkweeds. Blossoms in July, August and September. Climbing over bushes and weeds and in trees.

CONVOLVULACEAE. Morning-glory Family.

Ipomoea trifida (H. B. K.) G. Don. Wild Morning Glory.
"Manto"

Vines that twine and trail extensively over the ground or low shrubbery, and have large, pink to purple, flaring bell-shaped

flowers that close with the heat of day. Leaves simple, alternate. Blades mostly strongly 3-lobed, the shorter lateral lobes usually again 2-lobed. Corolla resembling the horn of an old fashioned phonograph, about $1\frac{1}{4}$ " long, purple with darker purple throat. 3 to 10 at the end of slender axillary stalks. Stamens 5, unequal. Pod 4 to 6-seeded, hairy, about the size of a pea. Widespread. Common in all vacant lots and uncultivated fields, and a weed in the average flower garden.

Ipomoea lindheimeri A. Gray.

Wild Morning Glory.

(*Pharbitis lindheimeri* [A. Gray] Small.)

Vines similar to the preceding species in general appearance and habit. Flowers much larger, light blue, solitary on slender peduncles, the corolla being 2 to 3" long and nearly as broad. Stems retorsely pubescent. Leaf-blades 2 to 4 inches in diameter, rounded in outline, 5-parted, the 3 interior lobes ovate with a much contracted base. Sepals bristly-hairy at the base. April to July. On rich ledges and shaded tops of limestone hills.

Convolvulus hermannioides A. Gray.

Bindweed.

Vines that twine and trail extensively over the ground or low shrubbery and weeds, and have white flowers usually with red centers similar to a morning glory only smaller. Leaves simple, alternate. Blades usually oblong or oblong-lanceolate, 1 to $2\frac{1}{2}$ " long, with prominent basal lobes, wavy and irregularly toothed margins. Petioles nearly as long as the blades. Flowers $\frac{1}{2}$ to 1" across, flaring bell-shaped, solitary on peduncles shorter than the subtending leaves. Calyx consists of 5 overlapping sepals with a projection on each side at base. March to late fall. Widespread.

Evolvulus sericeus Swartz.

Silky Evolvulus.

Dwarf Morning Glory.

Low plants with few, slender, short, somewhat zigzag, spreading branches (2 to 12" long) and small white flowers re-

sembling miniature morning glories. Leaves simple, alternate. Blades $\frac{1}{2}$ to 1" long, linear to oblong, pointed at both ends, covered with silky hairs below, glabrous above. Flowers solitary on axillary thread-like pedicels, a little shorter than the subtending leaves. Sepals 5. Corolla saucer-shaped, 5-angled, about $\frac{3}{8}$ " across. Stamens 5. Usually poor dry soil. March to July.

CUSCUTACEAE. Dodder Family.

<i>Cuscuta arvensis</i> Beyr.	Dodder.	Love Vine.
	Strangle Weed.	Gold Thread.

A slender, twining parasite that forms a tangle of orange threads tying itself to weeds in vacant lots and waste places. Flowers tiny, white, waxy, fleshy, bell-like, in massed clusters at intervals along the curling, leafless, orange or yellow stems. This plant twines around bluebonnets, pigweed, verbenas, vicia and other plants, sometimes forming thick, orange-colored mats in uncultivated ground. Plant starts from seed in the ground but stem soon attaches itself to its host by minute disks that sink into the tissues of the plant upon which it feeds. The true roots shrivel and die causing the green plant to feed both itself and the parasite. Indians used this as a dye-stuff by boiling the vines and dipping the materials in the liquid. It is interesting to note that while there are about 50 species of dodder, none attack oats, wheat or other cereal crops. An interesting account of dodder as a noxious weed is given in Farmer's Bulletin No. 1161, U. S. Department of Agriculture.

HYDROPHYLLACEAE. Waterleaf Family.

HYDROLEACEAE. Waterleaf Family. In Small's Flora.
Nemophila phacelioides Nutt. Baby Blue Eyes

Hairy, straggling annuals with weak spreading stems, lobed leaves and pale blue flowers about 1" across, on slender pedicels, $1\frac{1}{2}$ to 4" long, that branch out anywhere (except in the leaf-axils) on the upper part of the stem. Petals 5, united at their

bases, forming a saucer-shaped corolla, which is frosted, pale blue shading into white toward the center. Stamens 5, small, never yellow. Calyx of 2 circles of sepals, the small outer ones alternating with the 5 larger inner ones. Leaves opposite or alternate. Blades 2 to 4" long, the margin divided into 5 to 9 segments. April to fall. In shaded and moist ground.

Phacelia congesta Hook. Spider Flower. Caterpillars.
Blue Curls.

The phacelias coil their flower buds and stems like a snail and uncoil them with blooming. Simple, straight, often coarse-stemmed, leafy, hairy plants. Leaves simple, alternate. Blades ragged-looking, 1 to 5" long, soft, deeply cut into small and large toothed lobes. Flowers small, about $\frac{3}{8}$ " across, bluish-purple, in coiled clusters, the coils unfolding as the buds develop. Corolla 5-lobed, open bell-shaped. Stamens 5, conspicuous, spreading out of the corolla fully $\frac{1}{8}$ inch. April to July. Widespread. Common.

Marilaunidium hispidum (A. Gray) Kuntze. Sand Bells.
(*Nama hispidum* A. Gray.)

Rough-hairy, branched plants 6 to 10" high, with forking stems and small, 5-lobed, violet or blue flowers blossoming a few at a time in the leafy tips of the branches. Leaves simple, alternate. Blades broadly linear to spatulate, $\frac{1}{2}$ to 2" long, hairy, entire, acute. Calyx of 5 narrow bristly lobes about $\frac{1}{4}$ " long. Corolla 5-lobed, $\frac{3}{8}$ " to $\frac{1}{2}$ " across, usually yellow in the throat. Stamens 5, small, included in the throat of the corolla. Corollas fall off easily. March to summer. Common in the sandy region to the south and east of San Antonio.

Marilaunidium jamaicense (L.) Kuntze. Fiddle-leaves.
(*Nama jamaicense* L.)

Annual with branches 4 to 12 inches long spreading on the ground, and spoon-shaped leafblades that continue along the stem forming narrow wings. Leaves simple, alternate. Blades

$\frac{1}{2}$ to 2" long, wedge-shaped usually broadly so, rounded at the tips, entire. Flowers small, blossoming out of the leafy tips of the branches. Corolla less than $\frac{1}{8}$ " across, 5-lobed, white. Calyx lobes 5, minutely bristly hairy. April to fall. A roadside and lawn weed. Not conspicuous as the flowers are so few and small.

POLEMONIACEAE. Phlox Family.

Phlox roemeriana Scheele.

Phlox.

This low, much branched annual has simple, entire leaves, opposite below, alternate above, and bright pink, 5-lobed flowers (almost an inch across) shading into white with yellow centers. Blades spatulate or oblong to lanceolate, $\frac{1}{2}$ to $1\frac{1}{4}$ " long, sessile. Corolla 5-lobed, the divisions wedgeshaped and united at their tips into a narrow tube. Calyx lobes narrow, hairy, as long as the corolla tube. February to June, sometimes again in the fall. Dry, rocky hills and hillsides of the Edward's Plateau Region. Occasionally a white-flowered form is found.

Phlox drummondii Hook.

Phlox.

This is the parent of the cultivated annual Phlox of our flower gardens. Similar to *Phlox roemeriana* but flowers are red or real purple with deeper red or darker purple centers, more in a cluster and somewhat smaller. Plants are covered with clammy-viscid hairs and stem leaves are alternate, lanceolate to narrowly oblong, sessile, $\frac{3}{4}$ to $1\frac{1}{2}$ " long. Flowers have deep red centers and the tube of corolla is covered with gland-tipped hairs. Calyx lobes $\frac{1}{2}$ or less than $\frac{1}{2}$ the length of the corolla tube, narrowly linear, covered with glandular hairs. March to June. In sandy soil. A very common plant about 15 miles south or east of San Antonio. The plants are usually clothed with fine sand grains due to loose sand, which is blown over the sticky stems and leaves.

Phlox aspera E. Nels.

Plants somewhat similar to *Phlox drummondii* of the sandy regions to the south and east. These leaves are always opposite

up to where the flower stalks branch, narrowly lanceolate, rarely linear, sessile, 1 to 2½" long, and thick. April and May. This plant is comparatively rare growing only among the rocks of rich shaded banks of creeks in the Edward's Plateau.

Gilia rubra (L.) Heller. Standing Cypress. Trailing Fire.
(*Gilia coronopifolia* Pers.)

Bright red flowers blossoming at right angles to the tall, slender, dark, feathery-foliaged stems. Leaves simple, alternate, finely divided into 11 to 17 segments, giving the stem a feathery appearance. Corolla scarlet, tubular, 5-lobed, 1¼ to 1½" long, yellow spotted with red within. Stamens 5, exceeding the corolla. Small brown anthers tip the slender red filaments. Stigma 3-lobed, exceeding the stamens in length. May and June. Dry, rocky hillsides of the Edward's Plateau Region. Frequently cultivated in gardens.

Gilia rigidula Benth. Blue Gilia. Golden Eye.

Low, much branched perennial plants bearing blue flowers with conspicuous yellow centers, the flowers being 1 inch across. Leaves opposite, about 1 inch long, firm, divided into 3 to 7 linear segments. Petals 5. Sepals 5, sticky (due to presence of minute glandular hairs), united by their membranous margins. Stamens 5, united at their bases to the corolla. Capsule small, ovoid, buried in the calyx. Root tough and fibrous. March to June. On dry, rocky hills and hillsides. Named for Gil, a Spanish botanist.

Gilia incisa Benth. False Flax.

Slender stemmed plant with many ascending slender branches, incisely toothed leaves and small blue 5-lobed flowers (¼ to ½" across) that blossom singly at the tips of thread-like pedicels, 1 to 3" long. Lower leaves simple, alternate, 1 to 2" long, ovate to obovate, incised-toothed. Uppermost leaves entire, sessile and gradually reduced to bracts. Calyx 5-lobed, the lobes membranous-margined and united below the middle. Corolla

$\frac{1}{4}$ to $\frac{1}{2}$ " across, blue, somewhat similar to blue flax but much smaller. Stamens 5. Stigma 3-lobed. Pod oval or ovoid, less than $\frac{1}{4}$ " long, exceeding the calyx lobes and containing many seeds. Widely distributed, being found on tops of limestone hills, in ravines and in river bottoms. March to June.

SOLANACEAE. Potato Family.

Physalis mollis Nutt.

Ground-cherry.

Plant with weak, often half reclining branches, alternate, coarsely angulate-toothed leaves, and yellow 5-angled flowers, followed by inflated pods containing small tomato-like fruits. Leaves simple, alternate or opposite. Blades broadly ovate to rounded-cordate, coarsely angulate-toothed or wavy-toothed. Petioles $\frac{1}{4}$ to 2" long. Corolla saucer-shaped, 5-angled, about $\frac{1}{2}$ " across, yellow with purplish throat that is usually densely bearded with short white branched hairs. Stamens 5, erect, closing around the short pistil. Fruit an inflated, 5-angled, 5-toothed pod, sunken at the base and containing a smooth, yellow globular berry the size of a pea or larger. March to fall. Widespread, usually low ground.

Physalis mollis cinerascens (Dunal) A. Gray. Ground-cherry.

Similar to *Physalis mollis* but greener, less hairy, and having more rounded and less toothed leaf-blades. Leaves are generally opposite and blades are frequently unequal at the base. The Genus name has its origin in the Gr. *physalis*, bubble, from the inflated calyx.

Physalis virginiana Mill.

Similar to *Physalis mollis* in general appearance. Corolla 18 to 25 mm. instead of 15 to 20 mm. in diameter. Hairs are simple and not branched. Leaf-blades ovate-lanceolate, tapering at both ends, more or less wavy-toothed, often yellowish green. Plants are sometimes sticky due to the presence of glandular hairs.

Chamaesaracha conioides (Moric.) Britton. Ground Saracha.

Low, spreading, unattractive, sticky plants, much branched

at the base and having yellowish-green or pale yellow, saucer-shaped flowers, about $\frac{1}{2}$ " across, followed by whitish berries the size of big peas. Leaves simple, alternate or opposite. Blades wavy or segmented, tapering at base, 1 to 3" long, usually glabrate. Corolla saucer-shaped, 5-angled, about 1" across, white or yellowish, often tinged with purple. Stamens 5. March to July. In dry soil, clay hillsides, pastures and roadsides.

Solanum triquetrum Cav.

White Nightshade
"Hierba mora".

Green, slender-stemmed, often vinelike plants shrubby close to the root and bearing white flowers with conspicuous yellow anthers and followed by red berries the size of peas. Leaves simple, alternate. Blades lanceolate to ovate, entire or 3-lobed. Flowers few, in loose clusters, resembling the blossom of the Irish potato in general structure and appearance. Corolla deeply 5-lobed, white or purplish, about $\frac{1}{2}$ " across. Stamens 5, showy, with 2 pores at the apex of each erect anther. March to November. Usually growing intertwined in low shrubs and fences. Common.

Solanum nigrum L.

Black Nightshade.

Deep green annuals with clusters of small white flowers on short stems branching out of the stems anywhere like tomato blossoms, followed by clusters of juicy, black, poisonous berries the size of peas. Leaves simple, alternate. Blades thin, ovate, deep green, with wavy or entire margins. Flowers deeply 5-lobed, about $\frac{3}{8}$ " across, in clusters of 2 to 8, on short pedicels that branch out of the end of a flower stalk about 1 inch long and never in the axil of the leaf. Stamens 5, yellow, united to the tip around the pistil forming a conspicuous yellowish center. In rich, usually shaded soil. Not as common as *Solanum triquetrum*. The flowers are similar to the white nightshade only much smaller, and leaves are deeper green and broader. This is the "garden huckleberry" often cultivated. Fruits edible in pies but those of some forms are believed to be poisonous. Also sold

as "wonderberry." Allen & Gilbert give the following in their Textbook of Botany:

"There has been much discussion as to the poisonous nature of the black nightshade. The ripe fruits are said to have been eaten in considerable quantities without bad effects; on the other hand, cases have been reported of the poisoning of domestic animals by the eating of the leaves, and experiments seem to show that the berries are sometimes poisonous."

Solanum eleagnifolium Cav. Purple Nightshade. "Trompillo".

Pale, scurfy and silvery-stemmed, prickly plants, woody near the roots and having violet star-shaped flowers with conspicuous yellow anthers. Leaves simple, alternate. Blades scurfy, lanceolate to oblong, 1 to 6 inches long, usually with wavy margins, silvery underneath. Corolla wheel-shaped, 5-angled, purple or pale violet (sometimes white), 1 inch or less across. Stamens 5, conspicuous with erect yellow anthers, each anther opening by 2 pores at the top. Berries yellow, globular, about $\frac{1}{2}$ inch across. April to October. Common roadside, vacant lot and pasture weed. Fruits are used by Mexicans for curdling milk for cheese. The roots run down in the ground almost indefinitely.

Solanum torreyi A. Gray.

Purple Nightshade.

Plants with blossoms similar to *Solanum eleagnifolium* but with more stocky, wider spreading branches, larger and much broader leaves that are shallowly 5 to 7-lobed, covered with fine star-shaped hairs and have stouter prickles on the midrib and stem. Flowers slightly larger, more blue than violet, 1 to $1\frac{1}{2}$ " across. Anthers larger. Berries the same size but never black. April to fall. In waste places. Not as common as the preceding species. Usually in low grounds.

Solanum rostratum Dunal.

Yellow Nightshade.

Buffalo Bur.

Bristly, prickly plants with yellow, 5-angled, saucer-shaped flowers 1 inch or less across, and stems, leaves and fruits covered

alike with yellow spines. . Leaves simple, alternate, deeply segmented along the margin, prickly on the veins and midrib. Stamens 5, one conspicuously larger than the rest, the anthers opening by 2 pores at the top. Fruit enclosed by the enlarged calyx which is covered with stout, yellow bristles. February to fall. Usually growing in large patches in waste lands. Undoubtedly our most noxious weed in the fall.

Capsicum baccatum L.

Chilipitin.

Bird Pepper.

Similar in general appearance to *Solanum triquetrum* but the berries are always oblong (never round). These fruits are gathered and dried, and used for seasoning. Wild turkeys are fond of them, but when eaten in quantities will make the flesh unpalatable. The berries are a valuable preservative for meats. Beat the berries to a pulp, rub over the meat, and hang the meat in the air. This will keep the flies off.

To get rid of a "thoracic" cough, brew a tea of 1 tablespoonful of the berries, strain thru a cloth, add enough sugar to make a syrup; then take a little at a time. Mr. G. Schmeltzer calls this a "sure cure."

Nicotiana repanda Willd.

Wild Tobacco.

Annuals, 1 to 3 feet tall, with broad, clasping, oval or oblong leaves and slender, tubular, white flowers, $1\frac{1}{2}$ to $2\frac{1}{2}$ " long. Stem leaves simple, alternate. Blades entire, oblong, sometimes contracted slightly below the middle and then expanded again and clasping the stem at the base. Flowers blossoming one or two at a time along the upper part of the main stem or branches. Calyx 5 lobed, conspicuously 10-ribbed. Corolla, a slender, minutely hairy tube expanded above into 5 lobes, opening in the evening and closing the following day. March and throughout the summer. Waste places, preferably rich, shaded soil. Named for the French ambassador, Nicot.

Petunia parviflora Juss.

Dwarf Petunia.

Small, violet-flowered plant with small, flat but thick leaves,

alternate or clustered at intervals along much branched, short, spreading, creeping stems. Leaf-blades $\frac{1}{4}$ to $\frac{1}{2}$ " long, entire, oblong to spatulate, blunt tipped. Corolla small, purple or violet, $\frac{1}{8}$ to $\frac{1}{4}$ " across, 5-angled, open bell-shaped, set in a circle of 5 fleshy sepals. Stamens 4, half the length of the corolla. Forms small, spreading bunches of foliage on the stony bottoms of dry creek beds, where plants are rooted in shallow dirt-filled cups of flat but rough limestone rocks. Flowers blossom from June to fall.

Datura meteloides L.

Jimson Weed.

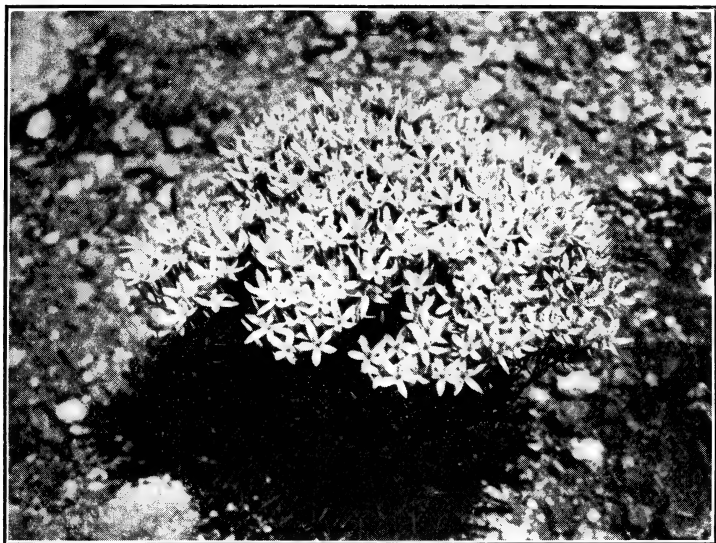
Jamestown Weed.

Devil's Trumpet.

Wide topped, bushy, ill-scented perennial with a stout, coarse, often purplish, downy stem growing from 2 to 4' high and with large, white or pale yellow, fragrant, trumpet-shaped flowers blossoming erect and solitary in the forks of the branches. Leaves simple, alternate. Blades soft, ovate or oval-ovate, entire, noticeably unequal at the base. Buds erect, resembling okra in fruit. Calyx tube 5-toothed, 3 to 4" long. Corolla white or pale yellow, 6 to 7 inches long, opening in the late afternoon and producing a heavy odor. Stamens 5, almost as long as the corolla. Pods round, bur-like, 1 to 2 inches across, thickly beset with stout prickles and with a conspicuous turned back collar that is formed by the long calyx tube breaking off close to the base and expanding as the seed-pod develops. The pods are erect when green, but when ripe the pedicel curves and droops, making it easy to scatter the many seeds when the walls split open. Summer and fall. In low grounds bordering ponds and streams. Not common. Seeds are poisonous, and used as a narcotic by some Indians.

Bouchetia anomala (Miers) Britton & Rusby.

Many-branched plant, 6 to 12 inches high, and bearing white flowers that resemble small morning-glories. Leaves simple, alternate. Blades broadly linear above, oblong elliptic or lanceolate below, $\frac{1}{2}$ to $1\frac{1}{4}$ " long, entire. Flowers $\frac{1}{2}$ " across, broadly



Mountain pink (*Erythraea beyrichii*), an attractive but rare gentian of the dry limestone hills of the Edwards Plateau, in this county. Each plant is a bouquet within itself.



Antelope horns (*Asclepiodora decumbens*), a milkweed named for its horn-like fruits. Another plant which gives a peculiar beauty to the dry and rocky hills.

funnel-form, white or white with delicate purple lines, on terminal pedicels. Stamens 5, 2 long, 2 short, the fifth smaller. Seeds numerous, in oblong capsules slightly over $\frac{1}{4}$ " long. In rocky soil and crevices of flat limestone rocks in dry creek bottoms.

BORAGINACEAE. Borage Family.

Lappula texana (Scheele) Britton.

Stickseed.

Bur Forget-me-not.

Hairy plants usually branched above and sometimes at the base, with mostly ascending leaves and tiny, white or pale blue, forget-me-not flowers. Leaves simple, alternate. Blades linear or oblong or narrowly spatulate, entire, 1 to 2" long. Corolla white or blue, very small, 5-lobed, subtended by leaf like bracts, along the upper parts of the stem or its branches. Calyx lobes 5, hairy, slightly exceeding the corolla. Fruits 3 or 4 in a cluster, each a small, hard white cup with inturned margin armed with stout prickles. March, April and May. Commonly known through the pestiferous little burs that get into ones clothing when crossing through fields and vacant lots. Common everywhere. The genus name has its origin in the Latin *lappa*, bur, *-ula*, little, from the fruit.

Cryptanthus texana (A. DC.) Greene.

Conspicuously hairy, branched plants with many branching bractless racemes, the flowers having conspicuously bristly-hairy calyxes and tiny white 5-lobed corollas blossoming out of the unfolding coiled ends of the raceme. Leaves simple, few, alternate, the blades narrow or oblong or oblong-spatulate, entire, $\frac{1}{2}$ to 1" long, very hairy. Sepals 5, narrow, covered with short bristly hairs. Corolla small, white, 5-lobed. March, April and May. In sandy soil. Differs from *Lappula texana* in the nutlets being smooth and not armed with barbed prickles. Hairs stick in the skin when one tries to pull up plants.

Lithospermum linearifolium Goldie. Puccoon. Gromwell.

Leafy plants 6 to 12 inches high, sparingly branched at the thick red roots and having tubular, yellow flowers with 5 frilled lobes in leafy clusters at the end of the stems. Leaf-blades about 2 inches long, narrow, entire, covered with white hairs. Corolla tubular, $\frac{3}{4}$ to 1 inch long, orange-yellow, with 5 rounded, frilled lobes. Calyx lobes about $\frac{1}{4}$ inch long, narrow, hairy. Late February, March and April. Dry, rocky hills and hillsides. Common.

Lithospermum mirabile Small.

Similar to the above species but basal leaves are narrowly oblanceolate to spatulate, stem leaves narrowly oblong ($\frac{3}{4}$ to $1\frac{1}{2}$ " long), blunt at the tips, and corolla lobes entire. Not common.

Onosmodium bejariense DC.

False Gromwell.

Stout-stemmed, almost bristly hairy plants tipped with coiled clusters of drooping, tubular, greenish-white, 5-lobed flowers, 1 inch or less long. Leaves simple, alternate. Blades oblong, entire, strongly veined, hairy, dark green above, lighter underneath. Corolla 5-lobed at the tip, the lobes greenish and tips turned inward and closing around the threadlike pistil which extends about $\frac{1}{4}$ " beyond the tube. Stamens 5, inclosed within the corolla and fastened to the upper part of the inner wall. April, May and June. In shaded soil.

This plant was first collected at San Antonio. The specific name was given for "San Antonio de Bejar", the old name of San Antonio.

Onosmodium helleri Small.

Similar to *Onosmodium bejariense* but corolla tube is shorter (less than $\frac{1}{2}$ " or 8-10mm long), rachis slightly zigzag, leafy bracts broad almost ovate, lobes of corolla longer (about as long as the tube), and plant is not as tall and stout, ranging from 1 to 2 feet instead of 1 to 3 feet.

HELIOTROPIACEAE. Heliotrope Family. In Small's Flora.*Heliotropium curassavicum* L.

Fleshy-leaved Heliotrope.

Moisture-loving plants 6 to 12 inches high, with fleshy leaves and usually pairs of coiled clusters of small, white, 5-lobed flowers. Leaves simple, alternate. Blades fleshy, linear or wedge-shaped. Flowers in one sided spikes, $\frac{1}{2}$ to 3 inches long and coiled at the tips. Corolla very small, 5-lobed, about $\frac{1}{12}$ " across. Fruit small, round, 4-lobed. April to late summer. Usually in alkali soil. The genus name has its origin in the Gr. *helios*, sun, *tropos*, to turn.

Heliotropium tenellum (Nutt.) Torr.

White Heliotrope.

Slender-stemmed, branched plants, 4 to 12 inches high, covered with appressed hairs, with linear leaves and small, white, 5-lobed flowers singly terminating short pedicels that branch out of the stems (never in a leaf axil). Leaves simple, alternate. Blades linear or narrowly linear-lanceolate, $\frac{1}{2}$ to 2 inches long, sessile or very short-petioled, the margin entire and more or less rolled back. Calyx of 5, small, distinctly unequal, leafy sepals. Corolla tube slightly surpassing the calyx. Corolla $\frac{1}{4}$ " across, the lobes rounded at their tips. Fruit very small, 4-lobed, broader than high, almost hidden in the calyx. In rocky dry creek beds and banks of streams. June to fall.

VERBENACEAE. Vervain Family.*Verbena bipinnatifida* Nutt.

Common Verbena.

An attractive plant, much like our garden Verbena, with hairy, square-stemmed, spreading or ascending branches, each tipped by a flat-topped cluster of small, deep lavender to pinkish-violet flowers each about $\frac{3}{8}$ " across. Leaves simple, opposite. Blades deeply once or twice divided into long narrow lobes. Corolla 5-lobed, about $\frac{3}{8}$ " across, the lobes notched and united at base into a narrow tube. Calyx lobes 5, narrow, pointed, about half as long as the corolla tube. Seeds 4, small. Wide-

spread, usually in patches. One of our commonest flowers, blossoming as early as February and as late as December.

Verbena ciliata Benth.

Wild Verbena

Spreading annuals with square stems, opposite leaves, and flat topped clusters of small, 5-lobed, reddish or real purple flowers. Leaves opposite. Blades broadly ovate, usually with 3 large but shallowly cut lobes, the lobes blunt toothed or cut with smaller rounded lobes. Blade tapers at base and continues along a short petiole. Calyx hairy, about the same length as the subtending bract. Corolla tubular (the calyx lobes shorter than the tube), 5-lobed, the lobes usually shallowly notched at their tips. Corolla about $\frac{1}{4}$ " across (7-8mm) and tube about $\frac{3}{8}$ " (10-15mm) long.

Verbena pumila Rydb.

Wild Verbena.

Similar to *Verbena ciliata* but leaf blades are typically less deeply and finely cut and flowers smaller. Corolla pale violet or purplish white, shorter (8-10 mm.), only about $\frac{1}{8}$ inch across (3-4mm). Not as common and never conspicuous. Genus named from the Latin *Verbena*, a sacred branch.

Verbena canescens H. B. K.

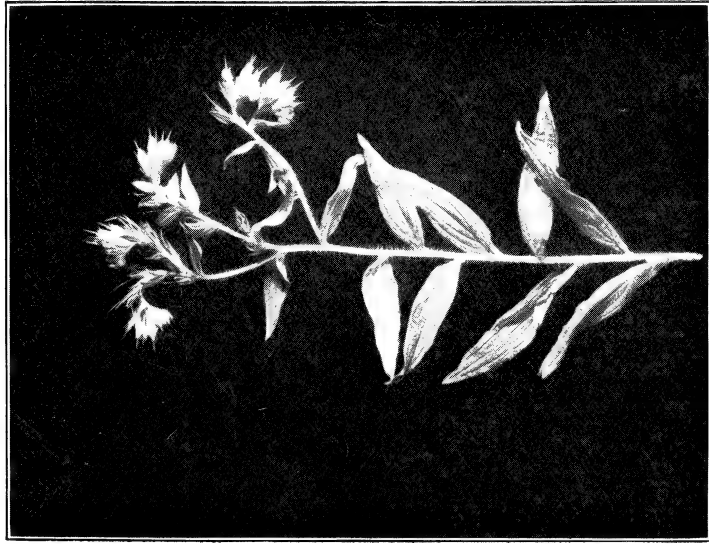
Vervain.

Square stemmed plant, 6 to 12 inches high, branched at base, having opposite, strongly veined leaves and tiny, blue or purple, 5-lobed flowers scattered along about the upper third of the erect stems or branches. Leaf-blades linear to ovate, incised or toothed, sometimes deeply lobed, veiny beneath, 1 to 2 inches long. Spikes conspicuously bracted, the tiny leaf-like bracts exceeding the calyx. Corolla 5-lobed, slightly 2-lipped. Seeds in groups of 4's in the calyx cups. March to June. Widespread, but showing a preference to well drained, rocky hillsides.

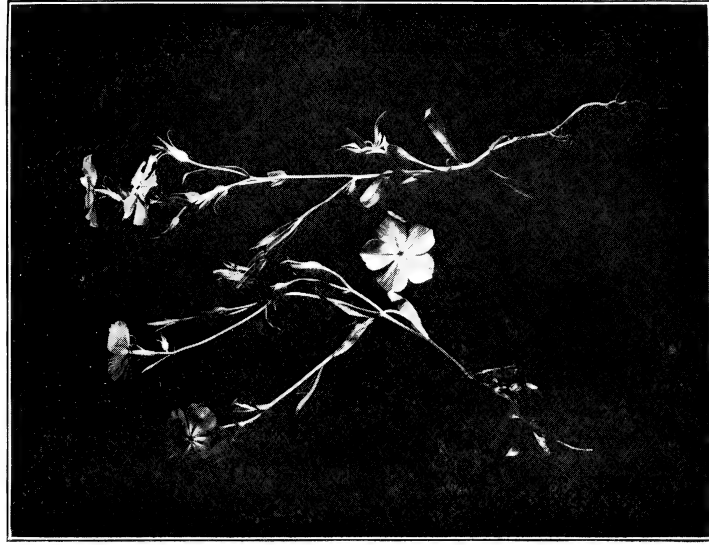
Verbena officinalis L.

Slender Vervain.

Slender and square-stemmed perennials, 10 to 24" tall, with tiny pale blue or deep lavender flowers scattered along the upper



False gromwell (*Onosmodium bejarense*). This plant was first collected at San Antonio. The specific name was given for "San Antonio de Bejar", the old name of San Antonio. (Courtesy of B. C. Tharp).



Phlox drummondii, the parent of the cultivated phlox of our gardens. Great patches of this small but sturdy plant brighten up the thickets and road-sides of the sandy land to the south and east of San Antonio. (Courtesy of B. C. Tharp).

parts of the many, slender, erect, grooved branches. Leaves simple, opposite. Uppermost blades frequently narrowly linear, those farther down the stem deeply cut into few, narrow lobes, and the basal veiny, ovate, with shallowly lobed or toothed margins, and blade narrowed into petioles at base. Corolla deep lavender or blue, less than $\frac{1}{4}$ " across, 5-lobed. Calyx narrow, with 5 sparingly hairy lobes. A tiny green bract, little over $\frac{1}{2}$ the length of the calyx subtends the calyx in fruit. Sandy soil south of San Antonio. Roadsides and waste places.

Lippia nodiflora Michx.

(*Phyla nodiflora* [L.] Greene.)

Low creeping plants with opposite leaves and compact, white or purplish, thimble-shaped or oblong clusters of very small, white flowers solitary on slender axillary peduncles longer than the leaves. Leaves simple, opposite, or clustered. Blades wedge-shaped, about 1 inch long, saw-toothed above the middle. Corollas 4 or 5-lobed, about $\frac{1}{12}$ " across, usually forming a white ring close to the top of the short purplish spikes. Creeping in low, wet grounds where the stems root frequently at the nodes or on dry rocky hillsides where stems grow 1 to 3 feet long, lie on the ground and spread but do not take root. April to November. Named for Lippi, a French naturalist.

Lippia lycioides (Lag.) Steud White Brush. Bee Brush.
(*Aloysia ligustrina* [Lag.] Small.)

Shrubs with pale, brittle branches and very fragrant, slender branched spikes (1 to 3 inches long) of small, white flowers. Leaves simple, opposite. Blades fragrant, slender, less than 1 inch long. Corolla tubular, 4 or 5-lobed, about $\frac{1}{8}$ " across. Calyx 4-lobed, minutely hairy. Fruit minute, dry, inclosed in a hairy calyx. Blooms continuously from spring to fall. Bushes grow singly or in patches and form almost impenetrable thickets in low ground. Very closely related to the "lemon verbena" of gardens.

Lantana horrida H. B. K.

Lantana.

Bunch-berry.

Bushy plant with rough, prickly, square stems and flat-topped, parti-colored clusters of yellow and orange-red verbenalike flowers. Leaves simple, opposite. Blades ovate or broader, rough above, veiny beneath, coarsely saw-toothed on the margin. Corolla tubular, with 4 or 5 broad, blunt lobes that make it $\frac{1}{4}$ " across the top. Flowers followed by globular clusters of shiny, purplish, stone fruits, the size of small peas. Blossoms continuously from spring to fall. Often cultivated for ornament. Rare here but very common in the sandy soil to the south of the city.

Callicarpa americana L.

French Mulberry.

A bushy shrub, 2 to 6 feet high, with scurfy stems, large, opposite leaves and small branched bunches of rose-pink or light phlox-purple flowers in the axils of the upper leaves. Leaves simple, opposite. Blades elliptic or oval, narrowed at both ends, saw-toothed, glabrous above, scurfy-pubescent underneath. Petioles $\frac{1}{2}$ to 2 inches long. Corolla 4-lobed, about $\frac{1}{8}$ " across. Stamens 4, equal, conspicuous, extending beyond the corolla. Flowers followed by small, globular, violet or lilac stone fruits, smaller than peas. June to fall. Low grounds along streams. Rare. A very ornamental plant both in flower and in fruit.

MENTHACEAE. Mint Family.

LAMIACEAE. Mint Family. In *Small's Flora*.

KEY TO MENTHACEAE. Mint Family.

A. Leaves compound.

Page

I. Leaves pinnately compound.

(1) Corolla scarlet *Salvia*—186

B. Leaves simple, opposite.

1. Leaves with 1 main vein at base.

a. Flowers pink to red.

m. Corolla scarlet *Salvia*—186

n. Corolla not scarlet.

- | | |
|---|--|
| <p>(x) Plants small, calyx tube finely 13-ribbed</p> <p>(y) Calyx tube not finely ribbed.</p> <p> (1) Calyx closed in fruit</p> <p> (2) Calyx not closed in fruit.</p> <p> o. Corolla apparently with only a lower lip</p> <p> p. Corolla with upper and lower lip</p> <p>b. Flowers white or shading into pink or purple.</p> <p> x. Shrubs</p> <p> y. Plants not shrubs.</p> <p> (1) Flowers in big rosettes at intervals along the stem</p> <p> (2) Flowers not in big rosettes.</p> <p> m. Corolla apparently with only a lower lip</p> <p> n. Corolla distinctly two-lipped.</p> <p> (1) Calyx closed in fruit</p> <p> (2) Calyx not closed in fruit.</p> <p> o. Corolla large, showy</p> <p> p. Corolla small, inconspicuous</p> <p>c. Flowers blue to purple.</p> <p> m. Shrubs</p> <p> n. Plants not shrubs.</p> <p> (x) Leaves entire or nearly so.</p> <p> (1) Calyx small, finely 13-ribbed.</p> <p> o. Flowers clustered in leaf axils</p> <p> p. Flowers solitary in leaf axils</p> <p> (2) Calyx not ribbed.</p> <p> o. Calyx toothed</p> <p> p. Calyx not toothed</p> <p> (y) Leaves not entire.</p> <p> r. Flowers in big rosettes at intervals on the stem</p> <p> s. Flowers not in big rosettes.</p> <p> (1) Calyx whitish or pale blue</p> <p> (2) Calyx closed in fruit.</p> <p> o. Calyx toothed</p> <p> p. Calyx not toothed</p> <p> (3) Calyx open in fruit</p> <p>2. Leaves with more than 1 main vein at base.</p> <p> a. Flowers white or nearly so.</p> | <p>Page</p> <p>Hedeoma—189</p> <p>Brazoria—184</p> <p>Teucrium—182</p> <p>Physostegia—185</p> <p>Salvia—187</p> <p>Monarda—188</p> <p>Teucrium—182</p> <p>Brazoria—184</p> <p>Physostegia—185</p> <p>Stachys—186</p> <p>Salvia—187</p> <p>Hedeoma—189</p> <p>Micromeria—189</p> <p>Salviastrum—187</p> <p>Scutellaria—182-3</p> <p>Monarda—188</p> <p>Salvia—187</p> <p>Brazoria—184</p> <p>Scutellaria—182-3</p> <p>Stachys—186</p> |
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- | | Page |
|--|-------------------|
| (1) Shrub (Flowers are usually blue)..... | Salvia—187 |
| (2) Plants not shrubs. | |
| o. Stems white-woolly..... | Marrubium—183 |
| p. Stems not white-woolly..... | Stachys—186 |
| b. Flowers pink to red. | |
| (1) Flowers clustered in the axils of the sessile leaves | Lamium—185 |
| (2) Flowers scarlet, not in the leaf-axils..... | Salvia—186 |
| c. Flowers blue to purple. | |
| m. Shrub | Salvia—187 |
| n. Plants not shrubs. | |
| r. Calyx finely 13-ribbed..... | Micromeria—189 |
| s. Calyx not finely 13-ribbed. | |
| (1) Calyx closed in fruit. | |
| o. Calyx toothed | Brazoria—184 |
| p. Calyx not toothed | Scutellaria—182-3 |
| (2) Calyx not closed in fruit. | |
| o. Flowers purple, clustered in the sessile leaf axils..... | Lamium—185 |
| p. Flowers blue to violet. | |
| (1) Corolla large, showy..... | Salviastrum—187 |
| (2) Corolla small, inconspicuous. | Stachys—186 |

Teucrium canadense L.

Germander.

Square-stemmed plants, 1 to 3 feet tall, growing in wet grounds along streams and margins of lakes, and bearing pinkish-purple or purplish flowers in whorls of 4 to 6 along the upper parts of the several ascending branches. Leaves simple, opposite. Blades lanceolate to oblong-ovate, saw-toothed, 2 to 5 inches long. Corolla pinkish to pale lavender, with a large, shell-shaped lower lip dotted with purple and bearing 2 short lobes on each side. Upper lip apparently none as the 4 above mentioned lobes constitute this. Stamens 4, exserted from the deep cleft between the uppermost 2 short lobes of the corolla. Calyx cups shallow, 5-toothed, containing 4 seeds when in fruit. April to late summer.

Scutellaria drummondii Benth.

Skullcap.

Bright little violet flowers bobbing out of queer green calyxes. Leafy, square-stemmed plants, much branched at the

root. Leaves simple, opposite. Blades oblong to ovate, entire, soft, rounded at the apex, $\frac{1}{2}$ to 1 inch long. Flowers one in the axil of each leaf. Corolla 2-lipped, violet. Upper lip short, concave. Lower lip spreading, 3-lobed, the middle lobe broad and deeply notched having a white spot dotted with purple. Calyx purplish tinged, inflated, conspicuous for the little, military cap formation on the upper side. Differs from *Brazoria scutellarioides* in the corolla being violet, not purple, and in the conspicuous little cap like formation of the calyx. April and May. Widespread.

Scutellaria resinosa Torr.

Skullcap.

Bushy, square-stemmed, violet-flowered, leafy plants of the limestone hills similar to the above species but bushy and with tough perennial root. Leaves simple, opposite. Blades entire, about $\frac{1}{2}$ inch long, oval-elliptic or ovate. Flowers one in the axil of each leaf. Corolla 2-lipped, blue or violet. Upper lip 3-lobed. Lower lip with yellowish or white blotch in center dotted with purple. Calyx inflated, small, green often purplish, resembling a military cap and containing 4 small seeds. March, April, May and June.

Scutellaria cordifolia Muhl.

Easily recognized as a skullcap through the inflated calyx and flowers but differs considerably from the preceding skullcaps in general appearance and size. Stems are simple or sparingly branched, erect or ascending, 1 to 2 feet high, never becoming bushy. Leaves simple, opposite. Leaf-blades ovate to oblong-ovate, 1 to 4 inches long and serrate-crenate on margins. Petioles over $\frac{1}{2}$ as long as the blades. Flowers in simple or branched racemes. Corolla similar to that of *Scutellaria drummondii* but larger ($\frac{1}{2}$ to $\frac{3}{4}$ inch long), and brighter blue. April to June. In ravines and moist rich shaded woods. Rare.

Marrubium vulgare L. Common Horehound. "Marrubio".

Perennials with opposite, very rough-veiny leaves similar to

crepe, white-woolly square stems, and dense clusters of small whitish flowers in the axils of the upper pairs of leaves. Corolla 2-lipped, small, white. Upper lip erect, notched. Lower 3-lobed, spreading, the middle lobe largest and notched. Calyx small, with 10 hooked lobes. Plants are perennial. In late fall, the leaves die and fall off, the stems wither and look dead, but in early January little spidery woolly buds appear and soon form new branches. March to November. A common weed. Introduced from Europe.

Brazoria scutellarioides (Hook.) Engelm. & Gray. *Brazoria*.
Twin-flower.

Smooth, square-stemmed plants with many pale or rose-purple or phlox purple flowers in 2's along a simple or branched raceme. Leaves simple, opposite. Blades oblong to oblong lanceolate, 1 to 3 inches long, clasping, saw-toothed above the middle. Corolla tubular, 2-lipped, about $\frac{1}{2}$ inch long. Upper lip broad, rounded, concave. Lower lip 3-lobed with the middle lobe pale and dotted with purple. Lower 2-lobed lip of calyx presses up against the upper 3-lobed lip forming an inflated fruit which contains 4 seeds. April and May. In moist, rich soil. Often confused with skullcap, which has a violet corolla with lower lip dotted with purple, and a rounded lower calyx lip meeting the upper in fruit.

Brazoria truncata (Benth.) Engelm. & Gray.

Plants 10 to 18 inches high, with stocky, square, puberulent stems, thick, opposite, oblong leaves and terminal racemes of speckled, faint purple, 2-lipped flowers. Leaves simple, opposite. Blades oblong, $1\frac{1}{2}$ to 3" long, toothed above the middle, sessile. Flowers showy, blossoming up the tips of the main stems or branches about 1" from the ends. Calyx about equally 2-lipped. Upper lip shallowly 3-lobed. Lower lip finely toothed. Corolla tubular, 2-lipped, about 1" long. Upper lip pale purple, veined with deeper purple, 2-lobed, the lobes frilled and unevenly toothed. Lower lip 3-lobed, shorter, conspicuously and finely

speckled and dashed with purple. Stamens 4, the 2 outer longest, all of them spidery hairy at the base. Calyx conspicuously bearded at the base. Seeds 4, united to the base of the calyx cup, and seen only when the calyx cup is pinched on the sides to separate the upper and lower lip, which meet when the plant is in fruit. In sandy soil in southern part of the county. March to May.

Physostegia virginiana (L.) Benth.

False Dragon-head.
Lion's Heart.

Hollow, square-stemmed, wand-like plants, 1 to 3 feet tall, growing in mud along banks of streams and bearing pinkish or purple veined flowers that blossom in 2's at right angles to the slender, simple or branched, naked upper parts of the stem. Leaves simple, in distant pairs on the stem. Blades narrow, sparingly saw-toothed or entire, 2 to 6" long. Corolla tubular, 2-lipped, about 1 inch long, flesh-colored to deep pink, striped and dotted with purple within, purple veined without. Upper lip broad, concave, not notched. Lower 3-lobed, the middle lobe broader and notched. Stamens 4, spreading like a fan and united to the upper lip. Calyx tubular, 5-toothed, containing 3 or 4 3-angled seeds. May, June and July.

Lamium amplexicaule L.

Dead Nettle.

Henbit.

Square stemmed annuals, 4 to 10 inches high, much branched near the root, bearing opposite, veiny leaves at long intervals on the many slender, erect or prostrate stems. Leaf-blades veiny, broader than long, sessile, lobed or toothed above the middle, and forming a shallow cup with the stem running through the center. In these cups, are packed about a dozen tiny, slender, purplish, tubular, 2-lipped flowers. Calyx 5-toothed, hairy, shorter than the corolla, but expanding so as to contain the four oblong seeds as they mature. Corolla about $\frac{1}{2}$ " long, slender, tubular, dilated into a pocket near the upper end, the lower lip cleft. Common in neglected lawns and waste grounds. January to April. One of our earliest bloomers. Introduced from Europe.

Stachys agraria Cham. & Schlecht.

Hedge Nettle.

Woundwort.

Early-blossoming annuals with slender, square stems and few (usually 2 or 3), small, white or deep lavender flowers in the axil of each of the simple, opposite, ovate leaves. Upper leaves sub-cordate, oval, nearly sessile, obtuse at apex, crenate-margined. Calyx about $\frac{1}{8}$ " long, equally 5-lobed, the tips subulate. Corolla tubular (about $\frac{1}{4}$ " long), 2-lipped, slightly longer than the calyx. Upper lip short, slightly concave. Lower lip longer, broad, flat, 3-lobed, middle lobe largest. Corolla ciliolate and covered with minute glandular hairs without and bearded in the throat. Calyx similarly ciliolate and glandular hairy. Stamens 4. February to June. Widespread.

Salvia roemeriana Scheele.

Red Salvia.

Square stemmed, conspicuously hairy plants with tubular scarlet flowers about 1" long. Plants branched sparingly at the root. Lower leaves simple and rounded or ovate, or pinnately compound. Terminal leaflet large and similar to the blades of the upper leaves. Upper stem leaf-blades ovate to rounded, soft, veiny. Corolla bright carmine-red, tubular, 2-lipped. Lower lip 3-lobed, the middle lobe broadest and notched. Upper lip shorter, concave and notched. Stamens 2, with filaments that are apparently 2-forked, one fork bearing an anther, the other a rudimentary anther or none. Pistil long, red, threadlike, extending beyond the corolla. March, April and June. Ravines and rich ledges of limestone bluffs.

Salvia coccinea L.

Red Salvia.

Scarlet Sage.

"*Salvia escarlata*."

Flowers scarlet, similar to the above species. Plants much taller (1 to 3'). Leaves are never pinnately compound or segmented, but simple with triangular or ovate blades and blunt saw-toothed or scalloped margins. April to July. Not as common as *Salvia roemeriana*. There are about 500 species in this genus, about 50 of which are in cultivation in this country.



Puccoon, (*Lithospermum linearifolium*). A hard climb up the rocky, and often, steep hillsides, is necessary if one would find this little plant, as it hides its beautiful and delicately carved flowers among the grass-covered rocks of the hilltops. (Courtesy of B. C. Tharp).



Beard-tongue (*Pentstemon cobaea*), from the base of which children collect drops of nectar in the earling morning. A bold gaudy plant which should lend as much beauty to a cultivated garden, as it gives to its native rocky slopes. (Courtesy of B. C. Tharp).

Probably the commonest of these is *Salvia splendens*, a border plant and a native of Brazil. A *Salvia* of great economic importance is the common sage, *Salvia officinalis*, the leaves of which are used for flavoring.

Salvia farinaceae Benth.

Blue Sage.

A handsome wayside plant massing a glorious blue along the highways. Square-stemmed plants branched at the root and bearing whorls of tubular, 2-lipped, blue flowers at intervals along the upper part of the long, greyish, leafless stems. Leaves simple, opposite. Blades usually oblong-lanceolate, wavy or slightly and coarsely saw-toothed. Calyx pale blue, bluish or ashy white, square across the top, ribbed and covered with minute fine hairs. Corolla violet, 2-lipped. Upper lip hooded, densely bearded with violet hairs on the back. Lower lip broad, spreading, 3-lobed, the middle lobes largest and notched, usually marked with 2 white bars within the tube. April, May and June. In dry, rocky soil, mostly in pastures and along railroad tracks and roadsides.

Salvia ballotaeflora Benth.

Shrubby Sage.

“Mejorano”.

Shrub with light, brittle, square stems and blue 2-lipped flowers in elongating clusters at the ends of the many branches. Leaves simple, opposite, aromatic, strong-scented, ovate to triangular, $\frac{1}{2}$ to $1\frac{1}{2}$ " long, crenate, heavily veined underneath. Calyx conspicuously ribbed, 2-lipped, drooping, with the 2 sides folding against each other at maturity. Corolla 2-lipped, blue, the upper lip short, small, concave, hairy. Lower lip much longer, broader, flattened, 3-lobed, the middle lobe large and notched. In poor, dry, rocky limestone hills and hillsides. April to July.

Salviastrum texanum Scheele.

Conspicuously hairy, square-stemmed perennial, 8 to 18" high, branched at the root and above (the branches ascending), and bearing 1 to 3 pale blue to pale violet, 2-lipped flowers in

each of the clusters of leafy bracts that form opposite each other at intervals all along the upper parts of the stem and branches. Leaves simple, opposite. Blades sparingly hairy, narrow, sessile, entire or with very few coarse teeth. Corolla 2-lipped, widely gaping, $\frac{3}{4}$ to 1" long, very hairy in the throat. Upper lip small, concave. Lower lip much larger and longer, broad, flat, 3-lobed, the middle lobe broad and notched. Calyx conspicuously hairy on the outside, and bearded so densely within that the throat is closed at maturity. Stamens 2. March to July. On dry limestone hills and well drained hillsides.

Salviastrum seems to take two distinct forms. The second and more common one has the corolla tube longer and narrower, exceeding the calyx tube, and color is violet (not pale blue) with 2 parallel white bars that resembles fangs on the lower lip. Leaves are broader, often nearly oblong, and the floral leaves are longer. This may be *Salvia engelmannia* Gray.

Monarda dispersa Small. Purple Horsemint. "Aroma".

Rather coarse-stemmed plant with showy purple rosettes of flowers, surrounded by a whorl of purplish, 3-veined, leafy bracts at intervals along the upper portion of the stems. Leaves simple, set in opposite pairs on the stems. Blades linear to narrowly oblong, 1 to $4\frac{1}{2}$ " long, aromatic, closely dotted with minute glands, shallowly saw-toothed. Corolla funnel-form, strongly 2-lipped, wide-mouthed, gaping, lilac to rose purple, covered with minute glands. Upper lip arched. Lower lip larger, spreading, 3-lobed. Calyx with 5 bristle-tipped lobes at the top, and densely bearded in the throat. April to July. Grows in patches along the road, along railroad tracks, and in pastures. A white-flowered form with lower lip dotted with purple, and with pale bracts is quite common. *Monarda dispersa* differs from the succeeding species by the bristle-tipped calyx lobes and bracts and the larger corolla.

Monarda lasiodonta (A. Gray) Small. White Horsemint.

Similar to the purple horsemint but leaves are linear-lanceo-

late and bracts are white or pale foliaceous. Corolla creamy-white or yellowish, frequently finely dotted with purple, smaller, and only about $\frac{1}{2}$ " long. Lobes of calyx and bracts do not end in a long bristle. Named for Monardez, a Spanish writer on medicinal plants.

Micromeria pilosiuscula (Benth.) Small.

Square stemmed annuals branched at the base, the branches simple, prostrate (frequently taking root at the nodes), with opposite leaves and small pale purple flowers, one in the axil of each of the upper leaves. Leaves simple, opposite. Blades broadly ovate to rounded, $\frac{1}{2}$ — $\frac{3}{8}$ " long (12—18 mm.), undulate, glabrous, truncate or heart-shaped at base, rounded at the tip. Leaf stalks short (2—3 mm.). Calyx $\frac{1}{8}$ " long, finely 13-ribbed, 5-toothed. Corolla $\frac{3}{16}$ " (5 mm.) long, bluish or pale lavender, 2-lipped. Upper lip short, notched. Lower lip 3-lobed. Pedicels thread-like, about as long as the corolla. Stamens inconspicuous, hidden in the throat of the corolla. June to fall. Low wet banks of streams. Seen along the river bank at Brackenridge Park.

Hedeoma acinoides Scheele.

Mock Pennyroyal.

Low, much branched, delicate-stemmed plants with opposite, aromatic leaves and tiny, pink, tubular flowers about $\frac{1}{2}$ " long, clustered in the axils of the upper leaves. Leaves simple, opposite. Blades aromatic, oval to oblong, about $\frac{1}{2}$ " long, often reddish-purple underneath. Corolla tube fully twice as long as the calyx tube. Upper lip of corolla, small, short, turned back. Lower lip larger, 3-lobed, with deeper pink spots within. Calyx tubular, finely ribbed, 5-toothed, slightly enlarged at base. March to July. In ravines, stony creek bottoms and rich ledges of cliffs.

Hedeoma drummondii Benth. Mock Pennyroyal. Lemon Verbena.

Strong-scented, branched plants, 6 to 12" high, with conspicuously bristly, ribbed, slender calyx tubes and small, 2-lipped, purplish corollas one in the axil of each of the numerous

upper leaves. Leaves simple, opposite. Blades strong-scented, entire, oblong to linear, less than $\frac{1}{2}$ " long. Corolla slender, tubular, 2-lipped, bluish or purplish, about $\frac{3}{8}$ " long, exceeding the bristly calyx half its length. Calyx tube slender, 13-ribbed, conspicuously covered with short, white, bristly hairs. March to July. Widespread. Unusually dry, rocky hillsides.

SCROPHULARIACEAE. Figwort Family.

RHINANTHACEA. Figwort Family. In Small's Flora.

Verbascum thapsus L. Mullein. Flannel Leaf.

This pale, hairy, single-stemmed, leafy stalk rises from 2 to 6 feet from a large rosette of thick, felty leaves. Stem leaves large (4 to 12 inches long), alternate, entire or obscurely toothed, ascending, prominently veined, soft, densely woolly, resembling flannel. Flowers yellow, crowded along the thick tough spike that forms the upper part of the stem, a few blossoming each day anywhere on the stem. Corolla yellow, usually less than 1" across, with 5 unequal, spreading lobes, downy on the outside. Stamens 5, orange-tipped, upper 3 usually fuzzy and shorter than the other two. Fruit an ovoid capsule. The hairs covering the plant are usually branched and are interesting when examined with a compound microscope. May to fall. Not common. A weed. Introduced from Europe. The leaves and flowers when dried properly are used in medicine in the treatment of catarrh and coughs and to allay pain. The leaves should be gathered when the plant is in bloom.

Linaria texana Scheele. Toad Flax. Blue Toad Flax.

This slim, delicate-stemmed, smooth and shining green plant grows from 1 to 2 feet tall, out of a cluster of short, basal stems with whorls of 3 small leaves at short intervals along each stem, and bears blue, fragrant, 2-lipped, spurred flowers at the top. Stem leaves few, simple, alternate, narrow, entire. Flowers blossom on the upper part of the delicate stems, forming loose terminal spikes. Corolla tubular, 2-lipped, with a slender spur.

Upper lip with 2 small, short, erect lobes. Lower lip broad, 3-lobed, at least three times as long as the upper, and having a white swelling near the throat that conceals the stamens and pistil. Stamens 4. Pod many-seeded, the size of a pea, opening by pores and forming up the stem as the plant continues to blossom. March and April. Well drained hillsides.

Antirrhinum antirrhiniflorum (Poir.) Small.

Climbing Snapdragon.

Monkey-flower.

(*Antirrhinum maurandioides* A. Gray.)

Smooth, trailing or climbing, slender-stemmed vines with 2-lipped, pansy-violet, velvety-lobed flowers, strongly resembling the cultivated snap dragon. Leaves simple, alternate. Blades triangular to ovate, entire or 3-lobed, with more than 1 vein at base. Flowers spring singly from the axils of the leaves. Upper lip of corolla 2-lobed, the lobes recurved. Lower lip broader, 3-lobed. Stamens 4. Pod several-seeded, size of a small pea. Climbs up fences and over and in bushes. Blossoms throughout the summer into late fall. This vine like the cultivated nasturtium is excellent for use with Evonymus in producing the European "flowering hedge."

Pentstemon cobaea Nutt.

Beard-tongue.

Dew-flowers.

Pentstemon.

This handsome erect plant grows 1 to 2 feet high, has stout, shiny green stems and showy, bell-shaped, purplish, 2-lipped flowers, clustered at intervals in the upper leaf axils. Upper leaves simple, opposite. Blades sessile, shiny, deep green, entire, or saw-toothed, oblong to ovate, sometimes lanceolate. Corolla 2-lipped, about $1\frac{1}{2}$ " long, purplish or reddish purple or paler, marked with purplish-red stripes within. Stamens 5, 2 long, 2 short, and one without an anther and bearded. March and April. Dry rocky hills and hillsides. Children call these dew-flowers, due to the habit of collecting drops of nectar from the base of the corolla tube early in the morning.

Monniera monniera (L.) Britton.

Smooth, fleshy-stemmed plants creeping in mud on banks of streams and waterholes. Leaves opposite, simple, fleshy, $\frac{1}{4}$ to $\frac{1}{2}$ " long, entire, largest above the middle and rounded at the tip. Flowers pale blue, 5-lobed, about $\frac{3}{8}$ " across. Corolla 5-lobed, upper lobes often notched. Flowers on slender, axillary peduncles longer than the leaves. Calyx unequally 5-lobed, three large, the two outer ones very small. Stamens 4, 2 long, 2 short. Blossoms continuously from spring to fall.

Mercardonia peduncularis (Benth.) Small.

Low plants with spreading branches, opposite leaves and small, flattened, 2-lipped yellow flowers, commonly growing in depressions of cracks of flattened limestone rocks in creek beds or on low ledges above the creek. Leaves simple, opposite, less than 1" long, 1 main vein at base, ovate, saw-toothed. Flowers solitary on slender axillary pedicels, 1 to 2" long. Sepals 5, not alike in size, and longer than the corolla-tube. Corollas yellow, lined with darker veins, flattened, 2-lipped, 4-lobed, the lower lobe broad and slightly notched. Stamens 4. Pods contain numerous seeds, so small that they look like pin points. Blossoms as early as January. The early plants are often killed by frost.

Veronica peregrina L.

Speedwell.

Brooklime.

This smooth, rarely sticky hairy plant grows 4 to 12 inches high, has a tiny, white flower in the axil of each of the upper leaves and is found in wet ditches, along brooks or in damp, shaded soil. Leaves simple, opposite. Blades entire or shallowly toothed, $\frac{1}{2}$ to $1\frac{1}{4}$ " long, slightly fleshy, blunt tipped. Corolla 4-lobed, white. Stamens 2. Fruits small, broader than long, flattened, notched at the apex, and set in 4 leaflike sepals. Spring to fall. Named for St. Veronica.

Castilleja lindheimeri A. Gray.

Indian Paint-brush.

Indian Blanket.

Stout-stemmed, gaudy-colored plants, 6 to 14 inches high,

usually branched at the woody root. Leaves simple, alternate. Blades usually deeply cut, 3-nerved at base, entire or 3 to 5 cleft. Uppermost leaves green at base gradually becoming orange or brick-red, forming the showy part of the plant. Calyx tubular, 4-lobed, colored like the corolla. Corolla tubular, 2-lipped, longer than the calyx. Lower lip small, short, 3-lobed. Upper lip long, narrow, inclosing the 4 stamens. March to June. Well drained, rocky hills and hillsides of the Edward's Plateau region. This plant is well named as it looks as if the ends had been dipped in paint.

Castilleja purpurea G. Don.

Indian Paint-brush.

Similar to the species described above but colored leafy parts and calyx are purple or magenta. Not common. Named for Castillejo, a Spanish botanist.

Castilleja indivisa Engelm.

Indian Pink.

Similar to the yellow or orange Paint-Brush but tips of plant are scarlet-red or scarlet. Annuals, sometimes branched at the base, 4- to 12" high. Leaves simple, alternate. Blades narrowly lanceolate, entire, 3-veined, some with several narrow lateral segments. Bracts similar to the stem leaves but broadened upward and scarlet like the calyx. Calyx tubular with 2 wedge-shaped lobes. Corolla inconspicuous, slightly surpassing the calyx. March and April. In sand.

ACANTHACEAE. Acanthus Family.

Calophanes linearis (Torr. & Gray) A. Gray.

Polka-dots.

Plants 4 to 10 inches high, branched at the root, and having violet, tubular, 2-lipped flowers about $\frac{3}{4}$ " long, solitary in the axils of the opposite leaves. Leaves simple, opposite, $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, entire, upper linear, lower spatulate and narrowed at base. Corolla slightly 2-lipped, 5-lobed, violet, middle lower lip marked inside with a double row of raised purple dots. Upper lip 2-lobed. Lower lip 3-lobed. Stamens 2 long, 2 short. Pod

oblong, 2-celled, 2-seeded, $\frac{1}{2}$ " or less long. April to June. Growing in the open.

Ruellia occidentalis Gray.

Wild Petunia.

Plants 1 to 2 feet tall, with showy blue flowers resembling cultivated single petunias. The few branches are weak, often reclining for half of their length on the ground. Leaves simple, opposite. Blades oblong to ovate, 1 to 4 inches long, wavy margined. Upper blades sessile, the lower with margined petioles. Flowers large, showy, purple or bluish-purple (some-times white), trumpet-shaped, about $1\frac{1}{2}$ " long. Calyx 5-cleft with long, slender lobes. Stamens 4, 2 longer than the other 2. Pod narrow, oblong, containing 9 to 12 seeds. Blossoms from spring to fall. Roadsides, pastures and waste places. Easily distinguished from the following species by the presence of viscid hairs on the calyx and inflorescence.

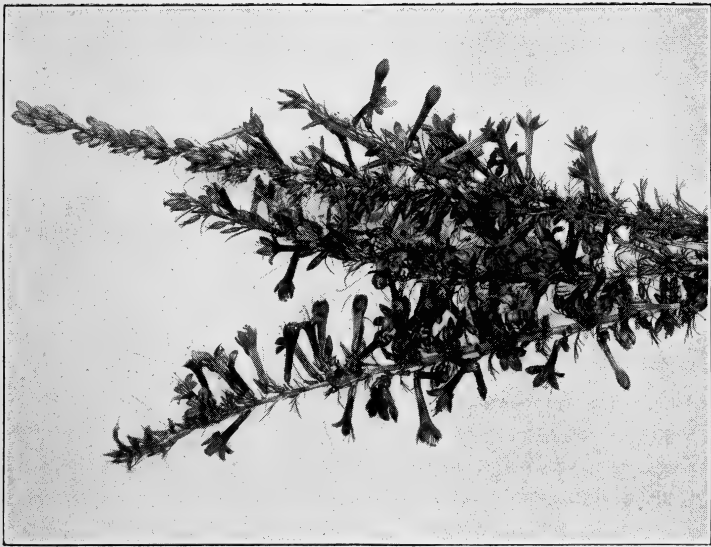
Ruellia drummondiana (Nees) A. Gray.

Wild Petunia.

Plants similar to the above species but having longer leaf blades (2 to 5" long), and a shorter corolla (1 to $1\frac{1}{4}$ " long). Fruit a 2-celled erect pod, narrowed at both ends and containing 2 flattened seeds in each. Roots thickened, fibrous, spreading. Inflorescence and calyx not sticky with glandular hairs. Not common.

Diapadium brachiatum (Pursh) Kuntze.

Plants with grooved stems, opposite leaves and strongly 2-lipped, bright phlox purple, axillary flowers. Leaves simple, alternate. Blades ovate to oblong-ovate, $\frac{3}{4}$ to 4 inches long, entire or wavy-margined. Leaf stalks shorter than the blades. Corolla 2-lipped, $\frac{1}{2}$ to $\frac{3}{4}$ " long, the upper and lower lips equal in length and similar, only the upper lip is slightly twisted at the base and has a darker purple pattern on the lower half. Stamens 2. Calyx very small, 5-toothed and hidden by the two small, round or square-tipped, leaflike bracts, which fold together and by a careless observer are mistaken for the calyx proper. Late summer and fall. In dry but usually shaded soil.



Standing cypress (*Gilia rubra*). These gorgeous scarlet sprays are so alluringly beautiful in their native surroundings that man has transferred them to brighten up his own garden or yard,—the greatest honor a flower can receive. (Photo by Dr. Elton Perry).



Lantana horrida. The lantana bears a profusion of parti-colored yellow and orange, verbena-like blossoms from spring to fall, and is an excellent decorative plant. (Photo by Dr. Elton Perry).

Siphonoglossa pilosella (Nees) Torr. False Honeysuckle.

Low plants, usually 2 to 10 inches high, with weak hairy stems, opposite leaves and a lavender flower with a large, spreading, 3-lobed lower lip one flower in the axil of each leaf. Leaf-blades spatulate to oval or ovate, about $\frac{1}{2}$ inch long, entire. Corolla-tube deep lavender or pale violet, narrow, $\frac{3}{4}$ inch long, divided at the top into 2 widely spreading lips. Upper lip small, narrow, usually turned back, and notched at the tip. Lower lip large, $\frac{1}{2}$ inch broad, broader than long, with 3 large spreading lobes and a white spot near the throat. Roadside and waste places where there is little other vegetation.

Dianthera americana L. Water Willow.

Smooth, white-flowered, erect plants rooted in mud or standing half submerged in shallow running water. Leaves simple, opposite. Blades usually narrowly lanceolate, 1 to 4 inches long. Flowers white or purplish, in pairs, close together on the ends of long slender axillary peduncles. Corolla 2-lipped. Upper lip turned back, notched. Lower lip deeply 3-lobed, the middle lobe purplish on the inner side. Stamens 4. Spring to fall.

MARTYNIACEAE. Unicorn-Plant Family.

Martynia fragrans Lindl. Devil's Horns. Ram's Horns.
Unicorn Plant.

Spreading, thick-stemmed, sprawling plants with sticky stems, leaves, flowers and fruits, and blossoms resembling those of our ornamental Catalpa and Flowering Willow trees. Leaves simple, alternate or opposite. Blades broadly ovate or rounded, 1 to 4" long, with 3 to 5 veins at base, wavy entire margins and the lobes frequently unequal at the base. Leaf-stalks as long as or longer than the blades. Flowers showy, tubular, lilac-tinted, 1 to $1\frac{1}{2}$ inches long and about as broad, and with 4 broad lobes, the lower lobe lined with yellow within. Throat and stamens finely dotted with purple. Upper lip short, turned backward, dotted with brown or red and covered with tiny, glistening, gland-tipped

hairs. Lower lip longer than the upper, with two broad lateral lobes the middle lobe striped with yellow within. Calyx 5-lobed, the lobes of different lengths and purplish like the base of the corolla. Stamens 4, of two lengths, each tipped by a 2-celled anther that has a broad red band running through the middle. Pistil longer than the stamens and flattened at the tip. Pods 3 to 5 inches long, large at the base and tapering into a hook that is sticky when green. When ripe the pod turns dark brown and splits lengthwise, forming two horns, the probable origin of its popular names. Summer and fall. In low, waste ground. The following is an excerpt from a letter written by Miss Yukona Baylor of Baylor, Montana: "The young pods of the Devil's horn plant are used as a substitute for cucumbers in pickling. As this country is too cold for cucumbers (they do not mature before the early frosts), we have planted Devil's horn this year." Genus named for Martyn, an English botanist.

PLANTAGINACEAE. Plantain Family.

Plantago occidentalis Dene. Common Plantain Rib-wort.

Stemless plants with a tuft of 3 to 5-ribbed leaves and 1 to several, slender, leafless spikes, 2 to 8 inches high, coming straight out of the tuft. Leaves all basal, 1 to 4½ inches long, oblong to spatulate, covered with single or branched hairs, and narrowed into margined flat petioles. Spikes 2 to 6 inches long, densely flowered. Petals 4, minute, membranous, spreading in the staminate flowers and erect in the pistillate. Stamens 4, equally small. A common weed.

Plantago rhodosperma Dene. Plantain. Rib-wort.

Similar to *Plantago occidentalis* but leaves are not always spreading. Corolla lobes ovate to deltoid-ovate (not narrowly ovate) and seeds are dark red (not fuscous). Common weed.

Plantago helleri Small. Plantain. Rib-wort.

Similar to the above species but having small, narrower, 3-

ribbed leaves that are conspicuously covered with white hairs. Corolla lobes conspicuously white-membraneous and spreading. Bracts very narrow, surpassing the calyx lobes. Found on the limestone hills and hillsides of the Edward's Plateau.

Plantago inflexa Morris.

Plantain

Annuals similar to Heller's Plantain but with 5 to 7-ribbed leaves and wide and membraneous margined bracts slightly surpassing the calyx lobes. Corolla lobes dark at base. Plants are matted with white hairs when young. Grows in sand to the south and east of San Antonio.

LORANTHACEAE. Mistletoe Family.

Phorandendron flavescens (Pursh.) Nutt.

Mistletoe.

Parasitic plants with the peculiar habit of forming bunches of thick, greenish-yellow stems that hang on the branches of trees and shrubs. Leaf-blades entire, 3-veined at base, thick. Blossoms thick, yellowish green, inconspicuous spikes 1 to 2 inches long, that develop into waxy white berries, the size of small peas, the following winter. Flowers are minute, 3-cornered, yellow cups, thickly set into 1 to 6 yellow bands at short intervals along the thick spikes. Gathered at Christmas for decorations and eaten by the small birds in January and February when food is scarce. Parasitic largely on hackberry, mesquite, and cedar elm. Blossoms in February and March.

The Mistletoe of legend is *Viscum album* of the Old World, similar to but not the *Phoradendron* of the Southern states. The mistletoe was early associated with the Druid priests, who robed in their white garments, went to the woods in winter, cut it with their golden sickles and dropped it into white cloths. These evergreens were kept in their homes as refuges from cold for the spirits of the woods.

RUBIACEAE. Madder Family.

Houstonia angustifolia Michx.

Innocence.

Bluets.

Baby's Breath.

Smooth, delicate and square-stemmed, forked and much branched plants with narrow, opposite leaves, and innumerable tiny, dainty, white or delicate lavender, 4-petalled flowers less than $\frac{1}{4}$ " across. Leaves simple, opposite. Blades narrow, 1 to $1\frac{1}{2}$ " long, entire, with margins often rolled back. Petals 4, velvety within. Stamens 4, alternate with the petals. These flowers are of unusual interest because of the dimorphic character of the stamens and pistils. In some flowers the stamens are long and exceed the pistil. In others the pistil rises above the stamens. Widespread. April and thruout the summer.

Houstonia humifusa Gray.

Low, tufted, repeatedly-forked, wiry, square-stemmed plants, 4 to 8" high, with small, narrow leaves and very small, 4-lobed, white flowers, sessile in the forks or in the axils of the upper leaves. Leaves simple, opposite, linear, appressed, more or less crowded, $\frac{1}{4}$ to $1\frac{1}{4}$ " long. Corolla 4-lobed, about $\frac{3}{16}$ " across, heavily bearded in the throat. In sandy soil and crevices of flat limestone rocks of dry creek beds. March to June.

Cephalanthus occidentalis L. Button Bush. Button Willow.

Shrub with conspicuous white or yellowish-white, globular heads of very fragrant flowers about 1 inch in diameter and resembling globular pin cushions. Leaves simple, opposite or in whorls of 3, lanceolate or oblong, 2 to 9 inches long. May, June and July. In ravines, on banks of streams, and frequently in the middle of dry creeks beds.

Crusea tricoeca (Torr. & Gray) Heller.*(Crusea allococca* A. Gray.)

Low hairy plants with short stout branches spreading close to the ground and simple, opposite leaves joined around the stem by a fringe of about six narrow, pointed, almost hair-like stipules.

Leaf blades $\frac{1}{2}$ to 2 inches long, linear to oblong-lanceolate, sessile, entire, many of them sickle-shaped. Flowers small, white, in crowded clusters at intervals along the branches. Sepals 4 or 5. Corolla 4-lobed, white. Stamens 4. March to June. Commonly spreading over poor, packed soil where vegetation is fairly scarce. Abundant in the sandy regions to the south and east of San Antonio.

Galium aparine L.

Cleavers.

Bedstraw.

Weak and square-stemmed, often vine-like plants with downward pointing barbs along the angles of the stems, and simple leaves that are 1 to 3 inches long and in whorls of 7 at intervals along the stem. Flowers small, greenish-white, 4-parted, in clusters of 1 to 3, on slender bristly stalks that come out of the axils of the leaves. Petals 4, minute. Stamens 4, minute. Fruit small, usually 2-lobed, bristly. Plants often form matted beds of prickly green foliage. Blossoms all summer. In low, shaded grounds. This plant is commonly used for bedding cattle in Bethlehem. It is supposed that this plant was in the manger in which Christ was borne.

Galium virgatum Nutt.

Cleavers

Bedstraw.

Similar to the above species but leaves are in whorls of 4, branches more erect and not as long, flowers solitary on short, leafy-bracted stalks in the axils of the leaves. Distance between whorls of leaves shorter. Leaves linear or linear oblong, less than $\frac{1}{2}$ " long, and flowers on recurved, leafy-bracted, axillary pedicels shorter than the leaves. March to June. River bottoms and banks of streams.

Galium texanum (Torr. & Gray) Wiegand.

Similar to *Galium virgatum* but leaf-blades broadly oval (not linear-oblong), flowers mostly terminal on slender naked stalks. Genus name has its origin in the Gr. *gala*, milk, which some species are supposed to curdle.

CAPRIFOLIACEAE. Honeysuckle Family.

Sambucus canadensis L.

Elder.

Shrub with pithy stems and branches, large compound leaves, and minute, white flowers in broad flat-topped clusters, 2 to 10" across. Leaflets large, 5 to 11, saw-toothed. Corolla flat, $\frac{1}{4}$ " across, 5-lobed, the lobes blunt and slightly recurved. Stamens 5, small, white, inserted on the corolla and falling off with it. Flowers followed by great wide-topped clusters of purplish-black, 1-seeded, edible berries smaller than peas. The much branched flower stalk turns bright purple in fruit. The flowers have also a medicinal value when dried carefully in the shade. They are used in the form of a poultice for treatment of tumors and similar afflictions. April and May. River bottoms, generally close to streams. Fruit valuable for making jellies and wines. Larger stems used by boys for making pop guns. Indians make a drink by dipping the blossoms in hot water. Also, an ornamental plant.

Viburnum prunifolium L.

Black Haw.

Tall shrubs with shiny green leaves and small, creamy-white flowers in flat-topped clusters, 1 to 2½" across, at the ends of short branches. Leaves simple, opposite. Blades smooth, shiny, oval to rounded, finely saw-toothed, $\frac{1}{2}$ to 2" long. Corolla 5-lobed, about $\frac{1}{4}$ " across. Stamens 5, united to the corolla. Fruits 1-seeded, oblong, edible, about three-eighths inch long, black and covered with a bloom. May and June. In woods and thickets.

Viburnum rufotomentosum Small.

Similar to Black Haw above but the short, stout petioles and veins underneath the leaf are covered with rusty or reddish brown hairs. Drupes are deep blue with a bloom, longer (10-14 mm.), and stone broader and larger. Corolla 7-10 mm. across instead of 5-6 mm. This is the more common of the two species.

Lonicera albiflora Torr. & Gray.

Wild Honeysuckle.

“Madreselva”.

A climbing shrub with the terminal pair of simple leaves united around the stems. Other leaves opposite, broadly oval to obovate, entire. Flowers fragrant, in a terminal cluster. Corolla funnel-shaped, 2-lipped, about $\frac{1}{2}$ " long, white, soon turning yellowish. Upper lip broad, 4-lobed. Lower lip narrow. Stamens 5. Berries blue, fleshy, the size of a pea. Summer. Thickets and margins of streams. Not common. Named for Lonitzer, a German botanist.

VALERIANACEAE. Valerian Family.

Valerianella stenocarpa Krok.

Wild Candytuft.

Lamb's Lettuce.

“Valerianeja”.

Smooth angled and hollow-stemmed annuals, 3 to 12 inches high, with widely forked branches and compact, flat-topped clusters of tiny, white flowers terminating the branches. Leaves few, simple, opposite. Blades entire or sparingly blunt-toothed, slightly fleshy, oblong or obovate. Corolla about $\frac{1}{12}$ " across, 5-lobed. Stamens 3. March, April and May. Shaded ground, ravines and banks of streams, quite as often covering acres of dry, rocky, open pasture land.

CURCUBITACEAE. Gourd Family.

Ibervillea lindheimeri (A. Gray) Greene.

Snake Apple.

Wild Pomegranate.

“Hierba de vibora”.

Slender stemmed vine climbing by tendrils, and conspicuous in the summer and fall for the pulpy, many-seeded, red, plum-shaped berries that hang from the vine where it has climbed over bushes and fences. Leaves simple, alternate. Blades rounded or broadly ovate, deeply 3 to 5 lobed, lobes variously segmented or wavy toothed, the lower surface covered with tiny resinous looking disks. Petioles about $\frac{1}{3}$ as long as the blades. Flowers yellow or yellowish green, about $\frac{1}{2}$ " long, 5-lobed, in

clusters terminating axillary stalks 1 to 3" long. Lobes of corolla frayed or frilled. Stamens 3. Stigma 3-lobed. Fruit when green looks like a miniature water-melon or striped gourd about 1" long. April, May and June. Widespread.

Melothria pendula L.

Creeping cucumber.

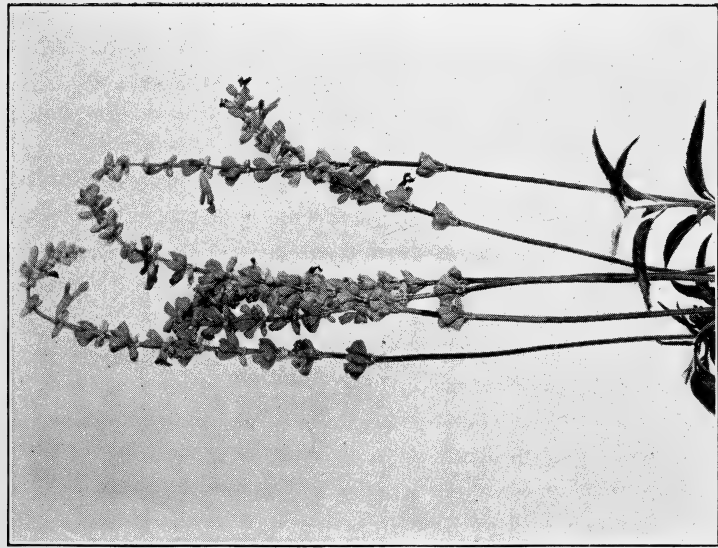
Vine bearing tendrils and small yellow flowers, and climbing over bushes or trailing over the ground. Leaves simple, alternate. Blades thin, heart-shaped or ovate in outline, with 3 to 5 angularly-toothed lobes. Leaf-stalks $\frac{1}{2}$ to $1\frac{1}{2}$ " long, hairy. Flowers bisexual, the staminate in racemes, the pistillate solitary. Corolla yellow, 5-lobed, about $\frac{1}{4}$ " across. Fruits speckled and striped like a miniature watermelon, shaped like a pecan, and from $\frac{1}{2}$ to 1" long. When ripe fruits are dark purple or blackish. May to fall. Commonly on banks of streams. Easily distinguished from *Ibervillea* which has smooth and thick leaves and red fruits. Banks of streams and marshy shores of lakes. May to fall.

Curcubita foetidissima H. B. K. Wild Gourd. Calibacilla.

Ill-smelling, coarse, pumpkin-like vine with thick heavy stems and strongly coiled, branched tendrils. Leaves simple, alternate. Blades very large, rough, greyish-green, from 6 to 10 inches long, strongly veined beneath, and having a very disagreeable odor. Flowers large, bell-shaped, the lobes recurved at their tips, orange-yellow, 2 to 3 inches long, 5-lobed and similar to blossoms of the cultivated pumpkin vine or squash. Fruit a smooth gourd, 2 to 3 inches across. April to fall. Trailing on waste ground.

Cyclanthera dissecta (Torr. & Gray) Arn. Bur Cucumber.

Vine climbing by tendrils and having palmately compound leaves of 3 to 7 leaflets (sometimes simple and 3 to 7 parted). Flowers staminate and pistillate on separate peduncles. Staminate flowers small, white, variously clustered or scattered near the ends of long slender peduncles. Corolla 5-parted. Stamens



Blue Salvia (*Salvia farinacea*), a handsome sturdy wayside plant, which sends its graceful and delicately tinted sprays of blue above the more lowly vegetation of its surroundings. (Photo by Dr. Elton Perry).



Horsemint (*Monarda dispersa*), the monopolizer of any waste space it chooses to occupy, as all other plants are either crowded out, or have their beauty hidden by the peculiar gorgeousness of its terraced white or purple sprays. The strongly scented leaves have given it its popular name. (Photo by Dr. Elton Perry).

united in a central column. Pistillate flowers solitary on a short peduncle in the axil of the subtending leaf with the staminate flower. Fruit a spiny ovoid fruit about 1" long. April to late summer. Ravines and shaded moist ground. Rare.

Sicyos angulata L. Star Cucumber. Nimble Kate.

Vine climbing by forked tendrils and bearing clusters of small white flowers. Leaves simple, alternate. Blades thin, 2 to 6 inches across, as broad as or broader than long, 3 to 5-veined, heart-shaped at base, 3 to 5 lobed, the petioles $\frac{1}{2}$ as long or as long as the blades. Flowers staminate and pistillate on separate axillary peduncles. Staminate flowers 5-lobed, 10-12 mm across, clustered on long peduncles. Pistillate flowers on shorter peduncles. Fruits clusters of hairy and bristly ovoid berries, $\frac{1}{2}$ to $\frac{3}{4}$ " long. April to fall. In rich, shaded soil.

CAMPANULACEAE. Bellflower Family.

Specularia perfoliata (L.) A. DC. Venus' Looking-glass.

Leafy, simple, angular-stemmed plants with fine hairs on the angles and alternate, veiny, clasping leaves that are broader ($\frac{1}{2}$ to $\frac{3}{4}$ inch broad) than long. Flowers violet, star-shaped, usually solitary in the axils of the upper leaves, blossoming one or two at a time at or near the tips of the simple stem. Stamens 5. Pod oblong, about, $\frac{1}{4}$ " long, tipped with the 3 to 5 calyx lobes and having an oblong yellowish spot near the middle of each of the two opposite sides. These valves later drop out and the seeds sift out of the openings. The lower seed pods bear 3 to 4 calyx lobes at their tips. These are interesting plants because you see new seed pods forming up the stem but never see the purple corollas until the plant is 10 to 12 inches high. This is due to the early flowers having undeveloped corollas. Widespread. Pastures and waste ground.

Specularia coloradoensis Buckl. Venus' Looking-glass.

Tall, slender, usually simple and angular stemmed plants, 1 to 2 $\frac{1}{2}$ feet high, with fine hairs or minute spine-like teeth on

the angles and bright blue, star-shaped flowers, $\frac{1}{2}$ to 1 inch across, blossoming in the axils of the uppermost leaves. Upper stem leaves simple, alternate. Blades 1 to $2\frac{1}{2}$ " long, usually narrowly lanceolate. Lower leaf-blades oblong or spatulate. Petals 5, joined at base and crowning a narrow, 3-sided tube, 1 to $\frac{3}{4}$ inch long. Fruit oblong, prismatic, about 1 inch long, solitary and sessile in the axils of the leaves, the 3 faces deeply grooved, and crowned by 5 calyx lobes. Widespread. April and May. Flowers are larger than *Specularia perfoliata*, leaves longer and narrower, and fruits longer.

Specularia bifora (R. & P.) A. Gray.

Similar to the above species of *Specularia* but stems are minutely retorsely hispid (use glass), leaf blades sessile, longer than broad, and the valves of the capsule are at the top instead of near the middle. April to June. Widespread.

LOBELIACEAE. Lobelia Family.

Lobelia splendens Willd.

Cardinal Flower.

Erect, very leafy plants, the upper part of the stems radiant with scarlet flowers. Leaves simple, alternate. Blades oblong lanceolate, finely toothed, with enlarged and thickened midrib at the base, and exuding milk when broken. Corolla tubular, split on the upper side, about 1 inch long, 5-lobed, the upper 2 lobes narrow, the lower 3 united and wider than the upper. Stamens united into a grey hook at their tips. As the flower matures, the inclosed stigma breaks through the hair-fringed tip of the hook and splits, forming two rounded hairy lobes. Pod 2-celled, containing many tiny seeds. Rare. The writer has seen three specimens in five years of field work. Summer and fall. Named for de L'Obel, a Flemish botanist.

ASTERACEAE. Aster Family.

KEY TO ASTERACEAE.

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|---|--------------------|
| A. Leaves compound. | |
| I. Leaves pinnately compound. | |
| (1) Flowers small, white, in flat-topped clusters | Achillea—239 |
| B. Leaves simple. | |
| I. Leaves netted veined. | |
| a. Leaves opposite or clustered. | |
| x. Leaves with 1 main vein at base. | |
| (a) Flowers yellow or orange. | |
| m. Ray flowers all yellow or orange. | |
| 1. Sap milky. | |
| (1) Plants stemless | Taraxacum—246 |
| (2) Plants with stems | Serinea—247 |
| 2. Sap not milky. | |
| x. Rays 4—5. | |
| (1) Stems coarse, flowers large | |
| (2) Stems not coarse, flowers | Lindheimera—227 |
| small | Calyptracarpus—233 |
| y. Rays 5—8, usually 8. | |
| r. Bracts of the involucre 4, | |
| very large | Tetragonotheca—228 |
| s. Bracts more than 4. | |
| (m) Leaves rough, petals | |
| orange | Zexmania—232 |
| (n) Leaves not rough, petals | |
| yellow. | |
| (1) Stems coarse, hairy. | |
| o. Leaves crenate | Berlandiera—226 |
| p. Leaves lobed | Engelmannia—227 |
| (2) Stems not coarse or | |
| hairy (sometimes hairy | |
| at the nodes) | Thelesperma—235 |
| z. Rays usually more than 8. | |
| 1. Flowers about $\frac{1}{4}$ " across, | |
| stems weak | Calyptracarpus—233 |
| 2. Flowers over $\frac{1}{4}$ " across. | |
| x. Bracts of the involucre 4, | |
| very large | Tetragonotheca—228 |

	Page
y. Bracts more than 4.	
r. Leaves rough, rays orange.....	Zexmania—232
s. Rays yellow, leaves not rough.	
(1) Leaves deeply segmented	Thymophylla—239
(2) Leaves not deeply segmented.	
o. Leaves entire, gland-dotted	Tetraneuris—237
p. Leaves toothed	Bidens—234
n. Ray-flowers not all yellow or orange.	
(1) Leaves all basal	Gaillardia—239
(2) Leaves not all basal.....	Coreopsis—233-4
(b) Flowers white or grading into pink or purple.	
r. Sap milky	Pinaropappus—244
s. Sap not milky.	
(1) Rays present.	
o. Rays showy, about $\frac{1}{2}$ " long.....	Melampodium—226
p. Rays inconspicuous	Eclipta—228
(2) Rays none, flowers all tubular.....	Eupatorium—214-5
(c) Flowers red or brownish-red.	
(1) Leaves all basal	Gaillardia—239
y. Leaves with more than 1 vein at base.	
a. Flowers yellow or orange.	
m. Shrub growing in pockets and crevices of limestone rocks.....	Laphamia—237
n. Plants not shrubby.	
(a) Leaf stalks with foliaceous appendage at base.	
(1) Foliage blue-green, ill-scented	Ximenesia—232
(2) Foliage not blue-green, not ill-scented	Encelia—231
(b) Leaf stalks not appendaged.	
r. Flowers about $\frac{1}{4}$ " across	Calypetrocarpus—233
s. Flowers over $\frac{1}{4}$ " across.	
1. Leaves rough, petals orange.....	Zexmania—232
2. Petals yellow.	

- Page
- (m) Stems smooth or nearly so.
 - (1) Rays 8, yellow.....Thelesperma—235
 - (2) Rays 8, brown-purple at baseCoreopsis—233-4
 - (n) Stems hairy or rough.
 - (1) Chaff of receptacle permanently investing the achenesSclerocarpus—229
 - (2) Chaff of receptacle not permanently investing the achenesViguiera—230
 - b. Flowers white.
 - m. ShrubEupatorium—214
 - n. VineMikania—215
 - o. Plants neither vines nor shrubs.Melampodium—226
 - b. Leaves alternate.
 - x. Leaves with 1 main vein at base.
 - a. Flowers yellow or greenish yellow.
 - m. Sap milky.
 - r. Leaves all basalTaraxacum—246
 - s. Leaves not all basal.
 - (a) Flower stalks with gland-tipped hairs just below the the flower.
 - (1) Stems coarse, hollow, leaves crispSonchos—246
 - (2) Stems not coarse, leaves not crispSerinea—247
 - (b) Flower stalks smooth, without glands.
 - (1) Flowers 1" or more across.....Sitilias—244
 - (2) Flowers about ½" across.....Lactuca—245
 - n. Sap not milky.
 - 1. Blades entire or nearly so.
 - r. ShrubChrysactinia—
 - s. Plants not shrubs.
 - (m) Ray flowers present.
 - (a) Rays drooping.
 - (1) Flowers large, leaves conspicuously hairy.....Rudbeckia—229

- Page
- (2) Flowers small, leaves not hairy *Helenium*—237-8
 - (b) Rays not drooping.
 - (m) Leaf-stalk with leaf-like expansion at base *Ximenesia*—232
 - (n) Leaf-stalks not appendaged at base.
 - (1) Rays 4—5, stems coarse *Lindhetmera*—227
 - (2) Rays usually 8, leaves milky-veined *Amblyolepis*—238
 - (3) Rays varying from 5—25.
 - o. Heads usually less than $\frac{1}{2}$ " across . . . *Gutierrezia* or
 - p. Heads usually over $\frac{1}{2}$ " across. *Gymnosperma*—217
 - (1) Leaves gland-dotted *Tetraneuris*—237
 - (2) Leaves not gland-dotted.
 - (a) Leaves strong-scented *Heterotheca*—218
 - (b) Leaves not strong-scented *Chrysopsis*—219
 - (n) Ray-flowers none.
 - 1. Leaves linear, entire *Kuhnia*—216
 - 2. Leaves broader than linear, entire or toothed *Coleosanthus*—216
 - 2. Blades not entire.
 - r. Bracts of involucre 4, large *Tetragonotheca*—228
 - s. Bracts more than 4.
 - (a) Disk columnar, rays drooping *Ratibida*—229
 - (b) Disk not columnar, rays not drooping.
 - (x) Stems smooth or nearly so.
 - (1) Leaves rigid, buds and involucre resinous *Grindelia*—218
 - (2) Buds and involucre not resinous.

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- o. Stems hollow Senecio—240-1
 - p. Stems not hollow Xanthisma—219
 - (y) Stems hairy.
 - (1) Rays 4—5, stems coarse Lindheimeria—227
 - (2) Rays usually 8.
 - o. Leaves crenate Berlandiera—226-7
 - p. Leaves lobed Engelmannia—227
 - (3) Rays usually more than 8.
 - o. Leaves small, finely segmented Thymophylla—239
 - p. Leaf stalks with toothed appendage at base Ximenesia—232
 - q. Leaves strong-scented when crushed Heterotheca—218
 - b. Flowers pink to red.
 - x. Sap milky Lygodesmia—245
 - y. Sap not milky.
 - (m) Leaves all basal, heads on long naked stalks Gaillardia—239
 - (n) Leaves not all basal.
 - r. Plants thistle-like.
 - (1) Leaves woolly underneath Cirsium—242
 - (2) Leaves not woolly underneath Perezia—243
 - s. Plants not thistle-like.
 - 1. Rays drooping, disk columnar Ratibida—229
 - 2. Rays not drooping.
 - o. Leaves entire.
 - (1) Flowers in a dense spike Lacinaria—215
 - (2) Flowers not in a spike Polypteris—236
 - p. Leaves not entire.
 - (1) Leaves prickly-edged Perezia—243
 - (2) Leaves not prickly-edged, rays partly colored red and yellow Gaillardia—238
 - c. Flowers white or shading into blue, pink and purple.
 - m. Sap milky Pinaropappus—244

n. Sap not milky.

r. Foliage or stems white-woolly.

1. Plants 1—2½' high, leaves
deeply cut Hymenopappus—236

2. Leaves not deeply cut.

- (a) Leaves all basal Chaptalia—243

(b) Leaves not all basal.

- (1) Plants 1—6" high,
branches spreading,
heads woolly Filago—224

- (2) Plants erect, 6—18"
high, heads not woolly Gnaphalium—225

- (3) Plants 2—4' high, blossoming in fall Artemisia—240

s. Foliage not white-woolly.

(a) Ray-flowers strap-shaped (In Parthenium and Leptilon the rays are scarcely visible) . . .

1. Ray flowers inconspicuous,
apparently none Erigeron—224

2. Ray flowers few, usually 4 or 5.

(m) Leaves deeply segmented.

- (1) Rays small, about 1/12" long Parthenium—227

- (2) Rays at least 1/8" long Achillea—239

(n) Leaves not deeply segmented.

- (1) Blades large, continuing on the stem Verbesina—232

(2) Blades not continuing on the stem.

o. Stems slender, flowers

- about 1/4" across Chaetopappa—221

p. Flowers showy, 1/2—1"

- across Melampodium—226

3. Rays about 12.

- (1) Flowers less than 1/2" across.

1. Plant 6—16" high, stems slender, branched at

	Page
base	Chaetopappa—221
2. Plant 1—4' high, branched above	Aster—221-2
(2) Flowers over $\frac{1}{2}$ " across.	
o. Heads on naked stalks	Melampodium—226
p. Heads not on naked stalks	Aster—221-2
4. Rays about 50.	
1. Leaf-blades entire	Erigeron—223
2. Blades not all entire	Aphanostephus—220
(b) Strap-shaped ray flowers none (Outer disk flowers often enlarged).	
1. Flowers large, 2—4" across	Centaurea—242
2. Flowers less than 2" across.	
(m) Shrub, leaves linear, dotted with resin	Baccharis—224
(n) Plants not shrubs.	
r. Leaves deeply segmented	Hymenopappus—236
s. Leaves not deeply segmented.	
(x) Flowers showy, about 1" across	Marshallia—235
(y) Flowers less than 1" across.	
(1) Leaves linear	Kuhnia—216
(2) Leaves broader than linear	Coleosanthus—216
d. Flowers blue to purple.	
1. Sap milky	Lygodesmia—245
2. Sap not milky.	
(a) Plant prickly.	
1. Leaves white-woolly underneath	Cirsium—242
2. Leaves not white-woolly underneath	Perezia—243
(b) Plant not prickly.	
m. Leaves all basal	Gaillardia—239
n. Leaves not all basal.	
r. Ray flowers strap-shaped.	
(1) Basal leaves about 1"	

	Page
long, flowers about $\frac{1}{4}$ "	
across	Keerlia—221
(2) Basal leaves over $1\frac{1}{2}$ "	
long	Aster—222-3
s. Rays flowers none.	
o. Flower stalk with sticky	
secretions	Polypteris—236
p. Flower stalks not sticky.	
(1) Leaves linear.	
o. Flowers in a spike	Lacinaria—215
p. Flowers in a flat-top-	
ped cluster	Vernonia—214
(2) Leaves broader than	
linear, toothed.	
o. Flowers in broad-top-	
ped clusters.	
(1) Individual flowers	
showy, about $\frac{1}{2}$ "	
across, bright pur-	
ple	Vernonia—214
(2) Individual flowers	
not showy, about	
$\frac{1}{4}$ " across, pale	
purple	Pluchea—225
y. Leaves with more than 1 vein at base.	
a. Flowers yellow or orange.	
m. Shrubs growing in pockets of	
limestone walls and boulders	Laphamia—237
n. Plants not shrubs.	
r. Leaf-stalks with toothed append-	
age at base.	
(1) Bracts of involucre 4, large	Tetragonotheca—228
(2) Bracts of involucre more than	
4	Ximenesia—232
s. Leaf-stalks not appendaged.	
(a) Leaves entire, milky-veined	Amblyolepis—238
(b) Leaves not milky veined.	
(1) Stems rough.	
o. Disk dark brown, heads 2—	
4" across	Helianthus—231
p. Disk paler, heads 1—2"	

	Page
across	Viguiera—230
(2) Stems smooth, hollow	Senecio—240-1
b. Flowers white.	
1. Strap-shaped rays none, corollas all tubular.	
(1) Leaves linear, flowers over $\frac{1}{2}$ " across	Marshallia—235
(2) Leaves not linear, flowers less than $\frac{1}{2}$ " across	Coleosanthus—216

AMBROSIACEAE. Ragweed Family. In Small's Flora.

Xanthium echinatum Murr.

Cocklebur.

Stout, rough stemmed plants with large, 3-nerved leaves as broad as long, inconspicuous heads of greenish-yellow flowers, followed by 2-beaked burs, about 1" long, and covered with stout, hooked, hairy spines. Leaves alternate, simple. Blades rough, 3-nerved, broader than long, heavily veined underneath, often 3-lobed, coarsely toothed, on long, rough, stout, grooved petioles. One of our most pestiferous weeds as the burs catch into clothing and hair and are difficult to remove. Mr. G. Schmeltzer of San Antonio reports this a valuable plant for rattle snake bite. In an emergency, beat leaves to a pulp and apply as a poultice to the wound. Then make a tea of the green fruits or leaves, by brewing 1 cup of mashed material with 3 cups of water. Use 1 teaspoonful at a time which will cause severe vomiting and relieve the stomach of the poison venom. Do this until the black fluid ceases to come from the stomach.

Ambrosia aptera DC.

Blood-weed.

Giant Ragweed.

Tall, coarse, rough-stemmed weed, often attaining 12 feet, and exuding dark red sap that looks like blood where the stem is broken. Leaves simple, opposite. Blades large, rough, 4 to 12" long, upper strongly 3-lobed, lower 5-lobed, the middle lobe often 3-lobed. Flowers inconspicuous. Summer and fall. A common low ground weed. It is the pith of this weed which is used by farmers and ranchmen to stop leaks in water tanks and troughs.

This is accomplished by inserting a dry sliver of the pith, into the cracks which leak. When this pith comes in contact with the water, it swells rapidly and stops the leak.

CARDUACEAE. Thistle Family. In Small's Flora.

Vernonia lindheimeri Engelm. & Gray. Ironweed.

Leafy-stemmed plants, 1 to 2 feet high, tufted at the base, each simple branch tipped with a broad cluster (2 to 5" across) of purple flowers, each set in a conspicuously white, furry involucre. Leaves simple, alternate, numerous. Flowers composite, purple, consisting of about 10 to 16 tubular, 5-lobed corollas and singly terminating white, woolly, leafless peduncles that expand into the slender, erect, bell-shaped, densely woolly involucre. Achenes small, 8 to 10 ribbed, tipped by a tuft of purplish hair-like bristles. Named for Vernon, an English botanist.

Vernonia interior Small.

Late flowering, leafy plants 2 to 4 feet tall, the few simple stems branched at the top forming a broad-topped cluster (3 to 10" across) of bright, purple flowers. Leaves simple, alternate. Blades elliptical to elliptic-lanceolate, toothed on the margins, 2 to 6 inches long, narrowed at each end, sessile. Flowers purple, composite, about $\frac{1}{2}$ " across, solitary on short stout peduncles, and consisting of about 20 tubular, 5-lobed purple corollas. Achenes tipped with a tuft of purplish, hair like bristles.

Similar to *Vernonia lindheimeri* but taller, coarser, leaves broader and involucre green (never white-woolly). June to fall. In the valleys of the Edward's Plateau Region.

Eupatorium ageratifolium DC. Thoroughwort. Boneset.

Spreading shrub with herbaceous branches and flat-topped clusters of 10 to 20 white flowers blossoming from June to November. Leaves simple, opposite. Blades triangular to ovate, 1 to 3" long, coarsely toothed, tapering into a long tip. Flowers composite, each flower being composed of numerous tiny, tubular

florets and protruding stamens that give the flower a fluffy appearance. Prefers ledges of limestone hills and bluffs. Named for Eupator.

Eupatorium serotinum Michx. Late-flowering Thoroughwort.
Boneset.

A white, flat-topped, late-flowering plant, 1 to 2 feet tall, with opposite branches and leaves, usually growing along stream banks or in dry creek beds. Leaf-blades lanceolate, greyish green, 1 to 4 inches long, with 3 main veins at base, tapering apex and coarsely saw-toothed margin. Flowers composite, white, small, gathered in a broad flat-topped corymb. Each flower is made up of numerous tiny, tubular, 5-toothed corollas. Ray flowers none. Fruits tiny, 4 to 5-angled achenes, tipped by a crown of capillary bristles. Blossoms in fall. Banks of streams. Rare. The flowers and leaves of a related species, *Eupatorium perfoliatum*, are used in the treatment of colds, fevers and dyspepsia.

Mikania scandens (L.) Willd. Climbing Hemp-weed.
(*Willugbaeya scandens* [L] Kuntze.)

Twining vines with branching stems, opposite leaves and large, flat, irregular clusters, 2 to 4" across, of dirty white or pinkish composite flowers that blossom in late summer and fall. Leaves simple, opposite. Blades triangular-ovate or halberd-shaped, sharp-pointed, wavy or angulately lobed, deeply lobed at base. Petioles long. Flower clusters are at the end of the short branches of the main vine stem. Plant forms a rank growth of matted leaves and blossoms as it climbs into trees and over piles of brush and stones along banks of streams.

Lacinaria punctata (Hook.) Kuntze. Blazing Star.
Button Snakeroot.

(*Liatris punctata* Hook.)

Stiff, erect plants, 8 to 18 inches tall, bearing spikes of rose-purple flowers along the upper third of the stems. Leaves

simple, alternate. Blades rigid, narrow, entire, 1 to 4 inches long, finely dotted with glands. Flowers composite, composed of 3 to 7 slender, tubular, rose-purple corollas and protruding purple stigmas that give each flower a fringy appearance. Rays none. Achenes oblong or club-shaped, tipped by a crown of feathery hair-like bristles. Stems spring from thick, onion-shaped tubers close to the surface of the ground. Blossoms in September and October. Dry limestone hills and hillsides.

Coleosanthus riddellii (Torr. & Gray) Kuntze
(*Brickellia riddellia* A. Gray.)

Late fall blossoming plant with greenish-yellow, composite flowers and slender stems leafy above and woody below. Leaves simple, alternate, numerous. Blades lanceolate to oblong-lanceolate, rough-veiny underneath, $\frac{1}{2}$ to $1\frac{1}{2}$ " long, entire or coarsely toothed. Flowers composite, composed of 15 to 20 tubular corollas packed in slender, greenish-yellow heads, about $\frac{1}{2}$ " high. Bracts of the involucre numerous, slender, pointed, in several rows. Achenes minute, tipped by feathery bristles. Blossoms in September, October and November. Common along roadsides and in pastures north and northwest of the city.

Coleosanthus cylindraceous (Gray & Engelm.) Kuntze.

Similar to *Coleosanthus riddellii* in general appearance but plants are thickly crowded with leaves. Leaves are broader, usually ovate, very resinous, firmer, 1 to 2 inches long, toothed or serrate-crenate, 3-nerved at base, yellowish-green. Involucres higher (10-11mm.) Grows in bushy forms, 1 to 3 feet high, the numerous stems unbranched at the base and conspicuously leafy and resinous all the way up the stems. Flowers solitary or in twos in the upper leaf axils. In *C. Riddellii* the flowers blossom near the tips of the branches and form a loose, more or less flat-topped cluster. Late fall. Common in gravel pits and dry, rocky creek beds.

Kuhnia rosmarinifolia Vent.

False Boneset.

Late, greenish-yellow flowering plants, branched at the root,

the woody wand-like stems naked below, branched and very leafy above. Leaves simple, alternate. Blades very narrow, entire, rolled back from the margin, $\frac{1}{2}$ to $1\frac{1}{4}$ " long. Bracts of the involucre slender, delicately ribbed, glistening with tiny glandular secretions, the outer successively shorter, and innermost long and closely appressed forming a narrow tube which holds the slender tubular flowers. Achenes slender, finely-ribbed, tipped by a circle of whitish, plumose bristles. In dry, open ground. October and November. Easily distinguished from *Coleosanthus riddellii* by the very narrowly linear leaves. Named for Kuhn, an American botanist.

Gymnosperma corymbosa DC.

Erect, smooth, yellow-topped, fall flowering plants, 1 to 3' tall, with stems woody below and fastigiately branched above. Leaves simple, alternate. Blades narrow, entire, 1 to 2" long, glistening, the lower ones 3-nerved. Flowers composite, yellow, less than $\frac{1}{4}$ inch across, consisting of 5 to 9 tiny, inconspicuous ray flowers and less than 10 tubular disk flowers. October and November. Gravel pits and dry rocky soil of the Edwards Plateau. Often mistaken for Broomweed but the flowers are smaller, the rays are not conspicuous, and the slender leaves are decidedly resinous.

Gutierrezia texana (DC.) Torr. & Gray. Broomweed.

Stiff, bushy, intricately branched, yellow, fall-flowering weeds, 6 to 18 inches tall. Leaves simple, alternate. Blades narrow, entire, $\frac{1}{2}$ to 2 inches long. Flowers yellow, composite, less than $\frac{1}{4}$ " across, blossoming a few at a time all over the tips of the branches. Ray flowers few. Disk flowers tubular, 16 to 20. One of our most common weeds. It derives its popular name from the use the Mexicans give it in tying it in bunches to use in sweeping sidewalks, yards and streets. Blossoms from July until late November. A few plants always survive the cold and go on blossoming into January and February. Named for Gutierrez, a Spanish nobleman.

Grindelia inuloides Willd. Gum Plant. Sticky Head.

Closely branching plants, 1 to 5 feet high, leafy up to the sticky resinous buds or bright yellow composite flowers that are about 1 inch across. Leaves simple, alternate. Blades rigid, oblong to lanceolate, 1 to 2 inches long, sometimes obovate, closely toothed to the partly clasping bases. Ray flowers 12 to 20, about $\frac{1}{2}$ " long. Involucre of several series of numerous narrow, sticky bracts with spreading green tips. March, April and May. Roadsides and pastures. Prefers sandy soil. Named for Grindel, a Russian botanist.

Grindelia squarrosa (Pursh) Dunal Gum Plant. Sticky Head.

Tall, stiff, simple stemmed plant, 2 to 3 feet tall, rarely branched at the root, with spiny-toothed leaves and few, bright yellow composite flowers, $1\frac{1}{2}$ to 2" across. Leaves simple, alternate. Blades thick, oblong to ovate, slightly clasping at base, few but spiny-toothed. Flowers have a sticky cup at base made of numerous slender, resinous, spreading bracts. Buds resinous and shiny. Ray flowers many, yellow, stiff, sticky, waxy. July to fall. On dry limestone hillsides of the Edwards Plateau.

Heterotheca subaxillaris (Lam.) Britt. & Rusby. Camphor Plant.

Sticky-hairy, branched plants with yellow composite flowers about $\frac{3}{4}$ " across and leaves that have a peculiar camphor-like odor when crushed. Leaves simple, alternate. Blades lanceolate to oblong, sparingly toothed, partly clasping at base. Involucre holding the flower composed of numerous sticky bracts. Flowers close at night and open in full sun the following morning. Summer and fall. Widespread, seeming to prefer roadsides and waste places.

Chrysopsis villosa var. *canescens* Gray. Golden Aster.

Pale, leafy, hairy plants, 6 to 16" high, branched at the root, and with yellow composite flowers about 1" across, growing singly or in clusters at the tips of the leafy stalks. Leaves simple, alternate. Blades greyish-green or silvery-grey, $\frac{1}{2}$ to 2 inches

long, soft, entire, narrowly oblong to oblanceolate, covered with appressed, silky hairs, the margins ciliate with few "shaggy" hairs. Ray flowers many. May to late fall. Dry limestone hills and hillsides of the Edwards Plateau.

Chrysopsis pilosa Nutt.

A slender bright yellow composite growing with and similar to *Xanthisma texana* but distinguished by the more numerous linear, hairy bracts of the involucre, the glandular hairy foliage, and soft, entire-margined leaves. Achenes pubescent, crowned by a tuft of fine bristles twice as long as the body, and an outer row of shorter, broader ones. Flowers close in the evening. This plant is sometimes confused with *Heterotheca* but is easily distinguished from it as it lacks the strong-scented leaves.

Xanthisma texanum DC.

Plant with ascending branches, narrow, entire leaves appressed to the stems which are tipped by bright yellow, wax-like composite flowers, 1 to 1½" across. Upper stem leaves simple, alternate. Blades 1 to 2 inches long, narrow, sparingly coarsely toothed or margined with minutely incurved teeth scarcely visible to the naked eye. Lower leaves longer, pinnatifid-toothed. Ray flowers a dozen or more. Bracts of the involucre short, broad, never hairy, of different lengths and overlapping. Branches leafy to the ends, which are tipped with the solitary, bright yellow flowers that close at night and open again in the full sun. Plants sold by seedsmen. A hardy annual. Flowers all summer in the North and East where it is cultivated. April to fall. Along roadsides and in pastures.

Solidago serotina Ait.

Goldenrod.

Late summer and fall blossoming plants with each slender leafy stalk terminating in a big pyramidal panicle of many widely spreading or recurved branches bearing numerous erect, yellow heads on their upper sides. Leaves simple, alternate. Basal leaves oblanceolate, 3 to 6 inches long, coarsely and shallowly

saw-toothed above the middle, entire below. Upper blades lanceolate, 3-nerved, 1 to 3 inches long, the margins remotely and shallowly toothed. Uppermost leaves and bracts entire and minutely ciliate. Flowers composite, yellow, about $\frac{1}{4}$ " across. Rays small, slender, about $\frac{1}{4}$ " long. This genus contributes richly to our natural flower gardens in the city. June, July and August. Probably introduced. Plants spread rapidly by root-stocks.

Solidago radula Nutt.

Inflorescence similar to *Solidago serotina* but upper stem leaves are small, very rough on both sides, and entire or nearly so. Limestone hills. September, October and November. Native and common north and west of San Antonio.

Aphanostephus skirrobasis (DC.) Trelease.

White Daisy.
"Margarita".

Simple or branched plants, 4 to 12 inches high, bearing showy, white flowers with yellow centers resembling the Shasta Daisies of our gardens. Leaves simple, alternate. Blades oblong to wedge-shaped or linear, up to 2 inches long, entire to wavy or coarsely 3 to 5 toothed above the middle. Flowers composite, $\frac{3}{4}$ to $1\frac{1}{2}$ " across. Ray flowers, about 25, white above purplish underneath. March, April and May. These daisies form one of our most attractive wayside flowers in the sandy region to the south and east. Flowers close at night and in rain but are wide open in the bright hot sun.

Aphanostephus humilis (Benth.) Gray.

White Daisy.

Plants 3 to 12" tall, branched at base and bearing composite flowers having yellow centers and a fringe of small white or purplish ray flowers. Basal leaves simple, broadest above the middle, entire or incised or pinnatifid. Upper leaves narrow, mostly larger above the middle and entire or coarsely toothed. Flowers solitary on slender pedicels. Disk yellow. Ray flowers numerous, white or purplish, not over $\frac{1}{4}$ " long. Achenes small,

with a crown of fine short hairs. Widespread. In poor or rich soil, cultivated fields or waste places. February to fall.

Aphanostephus ramosissimus DC. White Daisy.

Similar to *Aphanostephus humilis* but growing in drier and rockier places, usually well drained rocky hillsides and crevices of flat limestone ledges. Plants are usually taller, branched at base but not so much above, flower stalks are much longer and rougher. Ray flowers more numerous and purplish. Basal leaves larger above and tapering into the base, incised or pinnatifid. Upper stem leaves narrow, mostly entire, sessile. Spring and summer. Widespread.

Chaetopappa asteroides (Nutt.) DC. Dwarf White Aster.

A very much branched little aster, 4 to 12" high, with very small leaves, and minutely leaved or leafless, thread like branches, each expanding into a small, white, aster-like flower about $\frac{1}{4}$ " across. Leaves simple, alternate. Blades $\frac{1}{4}$ to $\frac{3}{4}$ " long, spatulate to linear, entire-margined. Disk small, yellow. Ray flowers 5 to 12, small, white, less than $\frac{1}{8}$ " long. Widespread. Equally common in sandy soil, dry pastures, and dry, rocky limestone hilltops. March to May.

Keerlia bellidifolia Gray & Engelm. Dwarf Blue Aster.

Slender stemmed, much branched annuals 6 to 12 inches high, with small, blue, aster-like flowers, $\frac{1}{4}$ to $\frac{3}{8}$ inch across, terminating thread-like peduncles. Leaves simple, alternate. Blades broadest above the middle or narrow, entire, less than 1" long. Flowers composite, blue with yellow centers, bearing 5 to 15 blue ray-flowers, and several minute yellow disk corollas. March and April. In rich soil of rocky hillsides and limestone ledges. Not as common as *Chaetopappa*. Distinguished from *Chaetopappa* by the blue ray flowers.

Aster exiguus (Fernald) Rydb. White Aster.

Late summer and fall-flowering plants of the white limestone hills. The several wand-like woody stems are different

from the other asters in usually having all their numerous short branches on one side, each short branch terminating in a white flower, $\frac{1}{4}$ " or less across, and consisting of many, tiny, white ray flowers and a tiny yellowish disk, and looking like many stars set in tiny, leafy cups. All the leaves on the branches are $\frac{1}{4}$ " or less long, crowded along the stem and covered with tiny short hairs (seen only with a lens). The few main stem leaves out of which the short branches spring are oblong linear, 1 to 2 inches long. Blossoms profusely in August, September and October. A characteristic plant of our chalk hills.

Aster exilis Ell. Roadside Aster. Common Aster.

Dusty green plant, 1 to 3 feet high, similar to Broomweed in general appearance, but having tiny pale lavender flowers with yellow centers, at the ends of the numerous, short, closely leaved, apparently naked branches. Leaves simple, alternate. Blades small, narrow, long-pointed, about $\frac{1}{4}$ " long, folded against the stem so closely that the plant appears leafless at a distance. Main stem leaves similar, linear to narrowly lanceolate, spreading and often 3" long. Flowers composite, about $\frac{1}{2}$ " across, with many narrow, pale lavender rays and yellow centers. Blossoms in late summer and early fall. Commonly lining roadsides. Our commonest Aster. The flowers are pretty in the field but are not useful as the rays curl up as soon as they are picked. Also close at night.

Aster salicifolius caerulescens (DC.) A. Gray. River Aster.

Much branched, tall plants with sprays of numerous pale violet to white, late-blossoming flowers growing in low, rich, damp soil close to banks of streams. Leaves simple, alternate. Blades 2 to 4 inches long, broadly linear, tapering at both ends, sessile, entire, and with one main vein at base. Flowers composite, $\frac{3}{4}$ to $\frac{7}{8}$ inch across, with pale violet to whitish rays and yellow to purplish centers, singly terminating short branches. Similar to *Aster exilis* but taller, blossoms twice as large, plants greener, and leaves longer and broader. These plants prefer

moisture, are very pretty in the fall, and especially attractive in neglected yards where they have grown voluntarily.

Aster sagittifolius dissitiflorus Burgess. Amethyst Aster.

Late summer and fall blossoming plants, 1 to 4 feet high, with short, slender, leafy, ascending branches terminating in sprays of numerous, crowded, delicate lavender or purplish-blue flowers. Leaves simple, alternate. Lower leaf blades ovate to broadly lanceolate with heart-shaped base, sharply toothed margin, and on slender or narrowly winged petioles. Upper stem blades lanceolate, rounded or heart-shaped at base, usually on short margined petioles. Those on the ultimate "flowering" branches chiefly sessile, lanceolate, entire, much smaller, $\frac{1}{4}$ to 1" long, fairly numerous. Flowers composite, about $\frac{3}{4}$ " across, with 8 to 15 slender purplish-blue rays (6-8mm. long). Bracts of the involucre linear, green, slightly spreading and in several rows. August, September and October. In rich shaded soil.

Aster texanus Burgess Texas Aster.

Similar to *Aster sagittifolius* in general appearance and time of blossoming but leaves have an open sinus instead of a deep and narrow sinus. Flowers solitary on short leafy (the leaves about $\frac{1}{8}$ " long) stems, $\frac{1}{2}$ to 3 inches long, that branch off the upper lateral ascending branches. Uppermost leaves numerous, ovate to narrowly elliptical, about $\frac{1}{2}$ " long, entire. Lower stem leaves oval-acute, shallowly crenate-serrate. Flowers similar to *Aster sagittifolius*. Plants usually profusely branched, with rigid stems, the ascending branches closely short branched and terminating in a violet or blue flower. In thickets. Fall.

Erigeron philadelphicus L. Daisy Fleabane.

Philadelphia Fleabane.

Rather soft-leaved, usually hairy and grooved stemmed plants, 1 to 2 feet tall, topped with loose clusters of drooping buds and white or pinkish flowers about $\frac{3}{4}$ " across, with conspicuous yellow centers and a fringe of 100 or more white or

pinkish rays. Upper leaves simple, alternate, few. Blades entire or sparingly toothed, lanceolate, clasping. Blades of the basal leaves larger above the middle and tapering toward the base, the blade continuing along the petiole. February to November. In shaded ravines, along banks of rivers and in river bottoms.

Erigeron canadensis L. Mare's Tail. Horse-weed.
(*Leptilon canadense* [L.] Britton.)

Tall, slender-stemmed plants, simple below, and with many ascending branches above, bearing numerous small, whitish inconspicuous flowers. Leaves simple, alternate. Blades linear, entire or slightly coarsely serrate. Flowers small, less than $\frac{1}{8}$ " across, white, composite, and appearing as if lacking ray flowers. Ray flowers whitish, little exerted above the involucre. Bracts of involucre very small, narrow, unequal, somewhat twisted. A common weed.

Baccharis angustifolia Michx. Goundsel Tree. False Willow.

Tall, slender stemmed, much branched, leafy, willow-like shrubs growing on banks of streams, in gravel pits or in dry creek beds. Leaves simple, alternate, numerous. Blades narrow, 1 to 3 inches long, entire or nearly so, finely dotted with resin. Flowers numerous, composite, inconspicuous, less than $\frac{1}{4}$ " across, whitish. Ray flowers none. Pistillate plants attractive in the fall when the innumerable tiny fruits become bunches of feathery hairs, making the many branches look like big grey plumes. Achenes less than $\frac{1}{12}$ " long, tipped by a tuft of silky hairs. August, September and October. Sometimes called pencil bush as the stems bear lustrous silky tufts resembling an artist's color-pencil in size and form. Genus named for Bacchus, the Greek god of wine.

Filago nivea Small. Poverty-weed. Chewing Gum.

Low, much branched, greyish-green plants, 2 to 5 inches high, with small, woolly-white foliage and tiny, white flowers, embedded in the white woolly ends of the many short stems.

Leaves simple, alternate. Blades entire or wavy, about $\frac{1}{2}$ inch long. A common weed of lawns and pastures. The leaves when chewed make a fair *gum*. Used by small birds, notably mocking birds, larksparrows, and scissor-tailed fly catchers in constructing nests. Widespread, especially common in lawns and city wastes. March to fall.

Filago proliфера (Nutt.) Britton.

Poverty Weed.

Chewing Gum.

Similar to the above species but flowers clusters are larger, over three-eighths inch (1 cm) across. Widespread. March to fall.

Pluchea purpurascens (Swartz) DC.

Marsh Fleabane.

Erect plants, 1 to 3 feet high, blossoming in late summer and fall in broad-topped clusters of deep lavender to faint reddish-purple flowers. Leaves simple, alternate. Blades shallowly but coarsely toothed, broadly lanceolate, sessile. Flowers composite, very small, cone-shaped, with several rows of deep pink to lavender bracts inclosing numerous tiny, tubular disk flowers. Achenes very small, crowned by a tuft of white capillary hairs. Grows in rich moist soil along lake margins, in creek beds and similar situations.

Gnaphalium falcatum Lam.

Cudweed.

Rather slender stemmed plants, 6 to 18 inches high, white-woolly foliage and compact, woolly clusters of silvery "rayless" composite flowers in the axil of each of the upper alternate leaves. Basal leaves spatulate, 1 to $2\frac{1}{2}$ " long, about equally woolly on both sides. Upper stem leaves narrower and 1 to $1\frac{1}{2}$ " long. (Flowers composite). Ray flowers none. Outer bracts of the involucre woolly. Common in sandy regions. Rarely seen in the Edwards Plateau.

Gnaphalium wrightii Gray.

Cudweed.

Perennials, 8 to 16 inches high, with densely white-woolly foliage and small compact clusters of silvery white flowers.

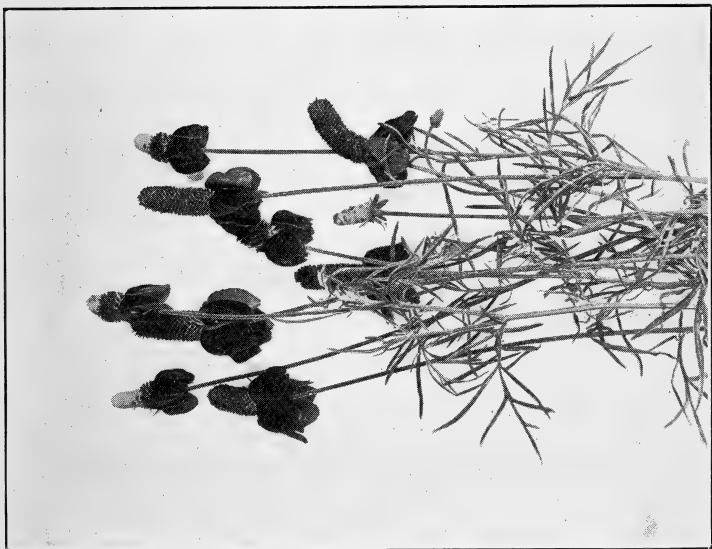
Stems tufted at base and branched above. Leaves simple, alternate. Blades spatulate to broadly linear, 1 to 2 inches long, entire, sessile, white woolly beneath, less so and greener above. Flowers silvery-white, crowded in compact heads about $\frac{1}{2}$ " across at the ends of short, stout, woolly, axillary peduncles. April to fall. In dry, rocky creek bottoms of the Edwards Plateau. Comparatively rare.

Melampodium cinereum DC. Rock Daisy. White Daisy.
Mountain Daisy.

A white daisy-like flower of the limestone hills and hillsides. Low plants with somewhat spreading branches that come from a common tough, perennial root. Upper leaves simple, opposite. Blades narrow, entire or wavy. Flowers composite, about 1 inch across, white with yellow centers. Rays 5 to 11, white, 2 or 3 toothed at the tip. Each of the 5 to 11 black seeds is contained in a tiny cup like hood formed by a bract of the inner involucre. Outer involucre is composed of 4 or 5 broad, flat, leafy bracts. The numerous tiny yellow disk flowers are sterile. March to November.

Berlandiera dealbata (Torr. & Gray) Small.

Leafy plants, 1 to 3 feet high, with densely white woolly stems, simple ovate leaves that are green above and whitish underneath, and composite flowers each with about 8 yellow ray flowers and a flat green or red disk. Disk flowers when mature are 5-lobed, small, dark red or purplish. Ray flowers about $\frac{1}{2}$ " long, deeply notched at the tip and folded around a branched red stigma at the base. Leaves simple, alternate. Blades ovate to ovoid, crenate-margined, 1 to 4" long, green above, whitish underneath. Flowers solitary on short, woolly, leafless peduncles. Involucre flat, consisting of about 3 series of fairly broad green veined bracts. Achenes flattened, not notched at apex and having no pappus. In sandy soil in the southern part of the county.



Ratibida columnaris. The niggerhead with its richly-colored velvety rays folded back against the stem is really very beautiful but goes unappreciated in a land where flowers are so plentiful. (Photo by Dr. Elton Perry).



Common sunflower (*Helianthus annuus*), the seeds of which are a valuable food for birds, especially the mourning dove. (Photo by Dr. Elton Perry).

Berlandiera texana DC.

Similar to *Berlandiera dealbata* but stems are not as woolly, and leaves are broadly lanceolate. Ray flowers fall soon. In the limestone hills of the Edwards Plateau. The genus *Berlandiera* is named for Jean Luis Berlandier, a Belgian, who was for some years in the service of the Mexican government. He was probably the earliest botanist to visit San Antonio, where he collected about 1827.

Lindheimera texana Gray & Engelm.

Texas Star.

Hairy plants with coarse, leafy stems and yellow, composite, 4 or 5-rayed flowers, over 1 inch across. Upper leaves simple, opposite. Blades entire or wavy, sometimes toothed. Rays 4 or 5, about $\frac{1}{2}$ inch long, notched at the tip and curling back in the hot sun. Achenes broad, with 2 divergent teeth at the apex. Upper stems often covered with hairs that are discolored (red) at the base. Widespread. March to June. Plants blossom when not over 2 inches high and continue to blossom until they get about 2 feet tall. One of our most common early composites. Named for Ferdinand Lindheimer, an early Texas botanist and resident of New Braunfels.

Engelmannia pinnatifida Torr. & Gray.

Engelmannia.

Stout-stemmed, coarse-haired, leafy plants with yellow, composite, 8-petalled flowers, 1 to 2 inches across. Upper leaves simple, opposite, sessile, usually deeply lobed along the margin. Rays curl back in the hot sun. Achenes flat, broadened upward, one rib on each face. March to June. Common, usually growing in patches along the road and in pastures. Often mistaken for *Lindheimera* but easily distinguished by the larger number of ray flowers and the deeper lobed leaves.

Parthenium hysterophorus L.

Ragweed.

Branched plants, 1 to 4 feet high, with ridged, fibrous stems, ragged leaves and any number of loose clusters of compact, white, 5-angled heads, about $\frac{3}{16}$ " across, and having a small cup-

like corolla in each angle. Leaves simple, alternate. Blades 1 to 8 inches long, deeply cut into three to several long lobes, these with few rounded teeth or narrowly oblong lobes. Flowers composite, white, the disk compact and composing the majority of the flower. Ray flowers 5, broad but very short, scarcely seen with the naked eye, 1 in each of the 5 angles of the flat, dense, white head. Blossoms from April to late fall. By far, one of the commonest roadside, alley and neglected yard weeds.

A near relative of the guayule plant, which grows farther west in Texas and in Mexico and from which commercial rubber is obtained.

Tetraganotricha texana (A. Gray) Gray & Engelm.

Ragged Daisy.

Few leaved plants 1 to 2 feet tall, with conspicuously square involucre of 4 broad leaflike bracts and few large yellow composite flowers, over 2 inches across, terminating the long slender naked stalks. Upper stems leaves simple, opposite, coarsely and bluntly toothed, wavy or deeply cut, clasping the stem on each side by a toothed disk. Flowers yellow with a large brown or yellow disk, and about 10 narrow rays each about $\frac{3}{4}$ " long, and having 5 parallel veins underneath. Achenes 4-angled. April, May and June. Widespread. Rocky soil also common in sandy regions to the south where the ray flowers are fully 1 inch long.

Eclipta alba (L.) Hassk.

A much branched weed with thick sprawling stems and small, unattractive, inconspicuous, composite, whitish flowers. Leaves simple, opposite. Blades 1 to 2 inches long, lanceolate to oblong, entire, wavy or obscurely toothed, sessile. Flowers composite, $\frac{1}{8}$ to $\frac{1}{4}$ inch across, with tiny 4-toothed disk flowers and a short, white fringe of ray flowers that are shorter than the bracts of the involucre. Bracts of the involucre, 5 to 6 in each of the 2 rows, the outer ones united to about the middle. Fruit a mound, about $\frac{1}{4}$ inch across, consisting of tiny, roughened, black, wedge-shaped achenes. Pappus none. Receptacle covered

with bristle-like chaff. In low wet places. Summer and fall. One of the most widely distributed plants, growing in all warmer parts of the earth.

Sclerocarpus uniserialis (Hook.) B. & H.

Summer and fall blossoming plants with irregularly toothed leaves and orange-yellow, composite flowers. Leaves simple, opposite or alternate. Blades ovate to broadly lanceolate, 3-veined at base, entire or with few blunt irregular teeth, acute, $\frac{1}{2}$ to 2 inches long. Leaf-stalks as long as or shorter than the blades. Flowers solitary, about 1 inch across, on long leafless stalks. Rays 5 to 12, about $\frac{1}{2}$ inch long, nearly as broad as long, abruptly constricted into a threadlike stalk at the base, falling away early. Disk flowers long, not compact as in the other composites, and further differing from all others in the conspicuous green bract which envelopes each flower for over half its length. Achenes $\frac{1}{8}$ " or less long, smooth, sometimes with a small crown at the top, and always inclosed in the green bract which is about $\frac{1}{4}$ " long and envelops the disk flower. Summer and fall. In thickets and along roadsides.

Rubbeckia bicolor Nutt. Black-eyed Susan. Cone-flower.

Rough, prickly-haired, stout-stemmed, erect plants with large flowers that have dark brown, conical centers and velvety, yellow or parti-colored yellow and brown rays. Leaves simple, alternate. Blades lanceolate or oblong to oval-elliptic, $\frac{3}{4}$ to 4" long, hairy, entire or coarsely toothed, rough to the touch. Flowers composite, over $1\frac{1}{2}$ to $2\frac{1}{2}$ " across, with dark brown, cone-shaped centers and 10 to 14 velvety ray flowers, clear yellow or yellow with reddish-brown base. April, May and June. Widespread, usually growing in patches along the road or in pastures. Named for Rudbeck, a Swedish botanist.

Ratibida columnaris (Sims.) D. Don. Nigger-head. "Gallitos"
(*Lepachys columnaris* Torr. & Gray.)

Fibrous, much-branched weeds, 1 to $2\frac{1}{2}$ feet tall, with

flowers that have a green or brown columnar disk 1 to 1½" long, and about 4 to 10 drooping, velvety, yellow or variously parti-colored rays. Leaves simple, alternate, deeply cut into 5 to 9 narrow segments. Flowers composite, over 1 inch across, with long, drooping, velvety, yellow, red, brown or brown-purple parti-colored rays that turn back against the long, slender, grooved flower-stalks. April to fall. One of our commonest weeds.

Ratibida picta (Gray) Small.
(*Lepachys picta* Gray)

Similar to the preceding species but flowers are on much longer, leafless peduncles (1 to 2 inches long), ray flowers are smaller (these not over ½" long), disk is longer (ranging up to 2"), leaves are on about the lower third of the plant, and blades have broader divisions. Plant grows in sandy soil near the southern border of the county. Not as common as the preceding species.

Viguiera helianthoides H. B. K.

Bushy, leafy, fall flowering plants, 1 to 4 feet high, with opposite leaves and yellow composite flowers about 1 inch across. Leaves simple, alternate or opposite. Blades ovate, 2 to 6" long, rough, shallowly and irregularly serrate or almost entire, 3-veined at base. Flowers solitary or few together, on long stalks at the ends of the many branches. Rays yellow, ⅜ to ¾" long, about a dozen, not seed bearing. Disk yellow, about ⅜" across. Achenes flattened, tipped by 2 awns, and encased in concave chaffs. Receptacle chaffy. Braets of the involucre narrow, in several rows. September, October and November. Grows in masses along roadsides and in fields. Plants may be confused with *Encelia calva*, which blossoms from April to fall, bears its flowers singly on long, naked, rough stalks (8 to 18" long), and has its leafstalks joined by a leaf-like appendage at the base.

Helianthus annus L. Sunflower. "Mirasol". "Girasol".

Stout, rough, often purplish stemmed, fibrous, erect plants, 2 to 10 feet tall, having large yellow flowers, 2 to 5 inches across, similar to the large cultivated sunflowers of our gardens. Upper leaves simple, alternate. Blades broadly ovate, large, toothed, rough-hairy, ovate, veiny beneath, heavily 3-veined at base. Flowers composite, yellow with brownish-black centers, and solitary on long rough stems. Rays many, yellow, 1 to 2 inches long, toothless. March to fall. Widespread, often lining roadsides for miles, and covering fields for hundreds of acres. Seeds form food for many birds. Well named as the flower follows the sun.

Helianthus cucumerifolius Torr. & Gray.

Similar in general appearance to the Common Sunflower. Plants more slender-stemmed, stems and branches mottled with purple, leaves smaller and thinner, and flowers with orange rays and not as large (usually 2 to 2½" across). In the sandy region to the south and east.

Helianthus maximilianii Schrad. Maximilian's Sunflower.

A tall, leafy plant with large, yellow, composite flowers about ½" across and blossoming in the fall. Leaves simple, alternate. Blades firm, lanceolate varying to linear, 2 to 8" long, tapering at both ends, entire (rarely toothed). Leafstalks very short or none. Flowers solitary, terminating short lateral branches on the upper part of the main stalk. Rays conspicuous, slender, 1 to 1½" long, 10 to 23. Disk ½ to ¾" across. Bracts of the involucre ½ to 1 inch long, lanceolate, with conspicuous slender tips. Achenes flat, 2-awned. Receptacle chaffy. September and October. In low grounds. Often planted like the Goldenrod for ornament.

Encelia calva Gray.

Rough-stemmed plants, with yellow composite flowers and simple, opposite leaves, the petioles joined at the base on each

side by a foliaceous appendage. Flowers composite, 1 inch or more across, solitary on long naked rough stems. Disk brown. Rays 13 to 19, yellow, about $\frac{3}{8}$ " long. Bracts of involucre narrow, leaflike, hairy. Leaf-blades rough, ovate or deltoid-ovate, sometimes hastately 3-lobed, irregularly toothed, 3-veined at base. Seeds flat, obovate, smooth, partly inclosed in a folded chaff. In dry soil.

Zexmenia hispida (H. B. K.) A. Gray Zexmenia.

Very rough, stiff, erect, branched plants, 1 to $2\frac{1}{2}$ feet high, with equally rough leaves and with orange-colored flowers about 1 inch across, tipping the long, naked branches. Leaves simple, opposite. Blades rough, usually lanceolate, sessile. Flowers composite, with 7 to 9 orange-colored rays, less than $\frac{1}{2}$ " long and disk about three-eighths inch across. May to fall. Dry, stony hillsides. *Encelia calva* has equally rough foliage but the flowers are larger, with golden yellow rays and deeper yellow or brown centers.

Ximenesia encelioides Cav. Crownbeard. Skunk-daisy.
(*Verbesina encelioides* Benth. & Hook.)

An early and late blossoming, disagreeable smelling, roadside and waste ground plant, 1 to $1\frac{1}{2}$ feet high, with ashy green or blue green foliage and large, yellow, sun-flower like blossoms. Leaves simple, opposite or alternate. Blades thickish, lanceolate to ovate, coarsely toothed, heavily veined underneath, the petioles having a toothed appendage on each side at base. Flowers composite, yellow, $1\frac{1}{2}$ to 2" across, with about a dozen large, yellow, 3-toothed rays, and a deeper yellow, sometimes brownish disk about $\frac{3}{4}$ " across. Bracts of the involucre greyish-green, leaflike, in several rows. Seeds winged. March to November. Common roadside and houseyard weed. Named for Ximenes, a Spanish physician.

Verbesina virginica L. Frostweed. Tickweed.
Wild Tobacco. Indian Tobacco.

Tall, coarse, white-topped plants, leafy to the top, blossoming

in late summer and fall, and having large, thick, simple leaves with blades that continue down the pithy stem giving it a winged appearance. Leaves simple alternate. Blades 2 to 8" long, lanceolate or oval or ovate, rough, coarsely toothed, heavily veined beneath. Blossoms heavy, wide-topped, greenish-white clusters. Flowers composite. Rays 4 to 10, short, white, about $\frac{3}{8}$ " long. Disk greenish, mounded, about $\frac{1}{8}$ " across. Fruit flattened, white-winged, obovate achenes with two awns at the top. Shaded waste land and moist banks of streams. Mr. G. Schmeltzer reports that this is the *marahuana*, to which the Mexicans become addicted to smoking much as the Chinese do opium.

Calyptracarpus tampicanus (DC.) Small. Straggler Daisy.
(*Calyptracarpus vialis* Less.)

Low plants with spreading or creeping branches and tiny yellow flowers solitary in the axils of the upper or terminal pair of leaves. Leaves simple, opposite. Blades ovate, about 1 inch long. Flowers composite, less than $\frac{1}{4}$ " across, the disk flowers usually 5, the small ray flowers 5 to 11. A common houseyard weed that threads the grass, often covering spots under mesquite and hackberry where the grass does not do well. Blossoms equally well in summer and winter.

Coreopsis drummondii (Don) Torr. & Gray. Tickseed.
Coreopsis. "Manzanilla silvestre".

Tall, slender-branched plants with grooved stems and yellow flowers each having a brown or dark red center and 8 yellow rays that are purplish-brown or dark red at the base. Leaves simple, opposite. Blades divided into several narrowly-oblong lobes. Petioles conspicuously hairy at the base. Flowers composite, $\frac{3}{4}$ to $1\frac{1}{2}$ " across, singly terminating long, slender peduncles. Bracts of the involucre in two rows, the outer 8 long, narrow, 8-10 mm. long, spreading but united at their bases, the inner 8, broader, ovate, as long or nearly as long as the outer, purplish-red, membranous, usually with recurved tips. Achenes

obovate, thick, convex, wingless. April, May and June. In dry soil. Grows in patches in low moist fields or pastures and is frequently seen growing on the margin of ditches, ponds and lakes. This genus is well known to plant lovers as several species are cultivated in gardens.

Coreopsis cardaminefolia (DC.) Torr. & Gray.

Similar to *Coreopsis drummondii* described above but easily distinguished by the very short, lanceolate outer row of involueral bracts, which are only from $\frac{1}{4}$ to $\frac{1}{2}$ as long as the inner row of bracts. Achenes elliptic-oblong, with a wing about one-third as broad as the body. April to July. Margins of ditches and ponds, and in drier places.

Coreopsis crassifolia Ait.

Sand dollars.

Coreopsis.

Sand Tickseed.

Similar to *Coreopsis* above but disk is comparatively small and yellow and the ray flowers are yellow with a pattern of faint, broken purple lines near the base, forming a broken purple ring around the disk. Rays usually longer. In dry sandy soil to the south and east.

Bidens chrysanthemoides Michx.

Wild Golden Glow.

Spanish Needles.

Smooth, thick-stemmed plants, 2 to 4 feet high, with large, sunflower like blossoms that come out in late fall and resemble the Golden Glow of northern gardens. Plants rooted in mud and growing in clumps along the margins of creeks, ditches and rivers. Leaves simple, opposite. Blades long, linear or lanceolate, tapering at both ends, half clasping the stem. Margins saw-toothed. Flowers composite, large, yellow, with a yellowish-brown button-like disk. Involucre consists of two rows of bracts, the outer of green leaflets, the inner yellowish and thinner. Seeds are flattened achenes, each tipped by two awns covered with short, downwardly barbed hairs.



Gaillardia pulchella. The firewheel ranks with the winecups and coreopsis in popularity and in Northern cities occupies a prominent place in the window displays of florists, a silent tribute to its natural beauty. (Photo by Dr. Elton Perry).



Coreopsis drummondii, commonly called the black-eyed Susan in error. A plant which is as attractive in its modesty as the gaillardia in its gorgeousness. (Photo by Dr. Elton Perry).

Thelesperma subsimplicifolium A. Gray.

Thelesperma.

Perennial, with pale, slender, swaying, few-leaved stems from $1\frac{1}{2}$ to $2\frac{1}{2}$ feet tall, covered with a "bloom" like cabbage, and bearing yellow composite flowers about 1 inch across. Stem leaves simple, opposite, far apart on the stem, narrow and entire, about as wide as the midrib and 1 to 2 inches long. Lower leaf-blades divided into 3 to 5 very narrow lobes. Flowers composite, yellow, singly terminating the many naked slender upper branches. Involucre of two sets of bracts, the outer green, narrow, pointed, the inner membranous. Rays 8, 3-toothed, yellow. Achenes narrow, wingless. April and throughout the summer. Limestone hills and hillsides of the Edwards Plateau.

Easily distinguished from *Thelesperma trifidum* by the smaller flowers, the yellow centers (never brown), the much taller and more slender swaying stems, and the "bloom" covered foliage and stems.

Thelesperma trifidum (Poir.) Britton.*(Thelesperma filifolium* Gray.)

Plants 1 to 2 feet high, each of the many branches terminated by a composite flower about $1\frac{1}{2}$ " across, and with purplish or brown centers and 6 to 9 yellow, 3-toothed rays. Leaves opposite, finely dissected into linear segments no broader than the rachis. Flowers singly terminating the naked slender upper branches. Involucre and fruit similar to above species. April to July. Widespread.

Marshallia caespitosa Nutt.

Puffballs.

Slender-stemmed plants with narrow leaves largely tufted at the root, a few alternating up the main stem, which branches into 1 to several, almost naked stems, each ending in a large, fluffy white flower ball about 1" in diameter. Leaves simple, alternate. Blades 1 to 4" long, entire, 3-nerved, broadly linear or oblanceolate. Flowers composite, composed of slender, tubular 5-lobed corollas. Ray flowers none. Bracts green, linear. Rocky hillsides, usually in the full sun. Flowers sometimes confused

with *Pinaropappus* (white dandelion) but differs in the flower consisting entirely of tubular 5-lobed corollas while *Pinaropappus* consists only of strap-shaped corollas and has milky sap. *Marshallia* has slender green chaffs that rise way above the numerous corollas when in bud.

Hymenopappus carolinensis (Lam.)

Hymenopappus.
Wild Cauliflower.

Greyish green, leafy, rank-growing weeds, simple below, branched above, and bearing wide topped clusters of rayless heads of white composite flowers. Plants woolly when young. Stem leaves simple, alternate. Blades green above, paler and covered with a thin mat of hairs underneath, cut once or twice into many narrow lobes. Flowers composite, consisting of small, white, tubular, 5-lobed corollas in heads about $\frac{1}{2}$ " across, these in turn united into a flat topped cluster. Ray flowers none. Bracts of the involucre green with white tips. A common wayside and vacant lot weed. April, May and June.

Hymenopappus robustus Greene.

Plants are similar to *Hymenopappus carolinensis* above but are permanently and densely covered with white matted wool. Bracts of involucre conspicuously white as well as the stout stems. In sandy soil to the south and east of San Antonio. April, May and June.

Polypteris callosa (Nutt.) A. Gray.

Stiff, wiry branched plant with rose-pink or rose-purple flowers and sticky secretions on the bracts and flower stalks. Leaves simple, alternate. Blades 1 to $2\frac{1}{2}$ " long, linear to lanceolate, hairy, entire or wavy. Flowers composite, less than 1 inch across, solitary on leafless, glandular-hairy peduncles, and consisting entirely of about a dozen deeply 5-lobed corollas. Ray flowers none. Bracts of involucre many, narrow, often purplish tipped due to the many short gland-dotted hairs. Achenes small, black, 4-angled, crowned by 8 to 12 membraneous scales. April. In sandy soil.

Tetranneuris linearis (Nutt.) Greene.

Actinella Daisy.

Yellow Daisy.

Perennial plants with 1 to several tufts of narrow leaves out of which rise one to several leafless, usually woolly-hairy stalks, 4 to 10 inches long, bearing at the top, solitary, bright yellow, composite flowers, 1 to 1½" across. Leaves simple, fairly rigid, narrow, entire, 2 to 3 inches long, dotted with minute glands. Rays 13 to 23, 3-toothed at their tips. Roots thick, tough, dividing at the top into the usually several tufted branches. February to fall. Limestone hills and hillsides of the Edwards Plateau.

Tetranneuris linearifolia (Hook.) Greene.

Tallow Weed.

"Monigoto".

Flowers similar to the above species but leaves are not tufted near the roots, usually broader and all along the branches. Flowers usually 1 inch or less across. Plants are smaller and being annuals have a comparatively small root system. Lower part of stems and lower leaves woolly. Leafblades linear or broader above the middle, softer than *Tetranneuris linearis*. Leaves never in tufts close to the roots. Stems branch from the main stem instead of from the top of the root. Dry, rocky soil. Late March to June.

Laphamia lindheimeri A. Gray

Bluff Daisy.

Shrubby, yellow-flowered plants growing in pockets and cracks of vertical walls of limestone rocks. The pendent or spreading stems 8 to 12" long, branch from a thick, woody root. Leaves simple, alternate or opposite. Blades about 1 inch long, ovate, 3-veined at base, few-toothed, dotted with minute glands. Flowers composite, yellow, about ¼" across. Rays 3 to 6, rarely more, sometimes none. Disk corollas 4-toothed. March to July.

Helenium microcephalum DC.

Sneezeweed.

Winged, erect, angular-stemmed, leafy plants, 1 to 2½ feet high, branched above and having small globular brown composite flowers with a fringe of small yellow rays that fold back against

the stems. Leaves simple, alternate. Blades entire, clasping the stem and continuing down the stem fully half the length of the blade. Flowers composite, less than $\frac{1}{2}$ inch across, the disk mounded or globular. Rays 8, small, 3-lobed, yellow, wedge-shaped, folded against the stems. Moist soil, depressions in flat land, frequently banks of small streams. Spring and summer. Petals droop like *Ratibida* but are smaller and disk is mounded.

Helenium elegans DC.

Sneezeweed.

Similar to *Helenium microcephalum* but ray petals are larger (5-7 mm.) long, disk smaller (4-5 mm.), pappus scales shorter than the width of the achene, and rays yellow or often brown or reddish at the base.

Amblyolepis setigera DC.

Honey Daisy.

Pale bluish-green hairy plants, 8 to 18" tall and bearing large, yellow, fragrant composite flowers (about $1\frac{1}{2}$ " across). Leaves simple, alternate. Blades entire, oblong or ovate to lanceolate, clasping the stem at base, conspicuously milky veined. Ray flowers usually 8, 3 to 4-lobed. Achenes broadened upward, and crowned by short, blunt scales. April and May. Abundant in patches along railroad tracks, roads and fields.

Gaillardia pulchella Foug.

Firewheel.

Gaillardia.

Indian Sunburst.

Showy branched plants having large gaudy composite flowers, each with a large reddish-brown center and about 8 to 12, 3-toothed ray flowers variously colored yellow or orange with red base or sometimes red, or red with yellow tips. Leaves simple, alternate. Blades spatulate to oblong or linear, entire or coarsely and sparingly toothed or lobed, sessile. Flowers solitary, more than 1 inch across, terminating long, naked stems. April to July. Common everywhere, growing singly or in patches. The firewheel rivals the Bluebonnet in popularity.

Gaillardia lanceolata Michx. Red Gaillardia. Red Firewheel.

Similar to *Gaillardia pulchella* but both disk and rays are a rich dark red that often causes them to be mistaken for red poppies at a distance. In the sandy region to the south and east. The plants as a whole are not as big and bushy, and flowers generally smaller. Named for Gaillard de Marentonneau, a French botanist.

Gaillardia suavis (A. Gray) Britton & Rusby.

Fragrant Gaillardia. Globe Flower. Pin-cushion Daisy.

Plants with a large rosette of basal leaves and 1 to several long, grooved, naked stems (1 to 2 feet tall) rising out of the tuft of leaves and bearing at each tip a fragrant, brown-purple or reddish-brown, globular head about 1 inch in diameter and usually without any ray flowers. Leaves $1\frac{1}{2}$ to 4 inches long, segmented along the margins. Occasionally the flowers heads have a fringe of 8 to 12 small, reddish-brown or orange rays. Commonly in small patches along roads and in pastures. March to July. In the sandy soil to the south the plant is dwarfed, ranging from 6 to 12 inches in height.

Thymophylla tenuiloba (DC.) Small.

Tiny Tim.

A low, leafy, bushy plant, 4 to 12 inches high with small composite flowers tipping long slender naked stalks. Leaves simple, alternate or opposite. Blades stiff, dark green, dotted with glands and divided into 7 to 11 narrow, bristle-tipped segments. Flowers composite, less than 1 inch across, yellow with large deeper yellow or brownish convex centers. Rays small, oblong, yellow, 11 to 19. Usually growing in very dry ground along the roadside, often so close that it gets into the wagon tracks. The plants have a peculiar but not unpleasant odor.

Achillea millefolium L. Yarrow Milfoil. Thousand Seal.

Feathery-leaved, strong-scented plants with small white flowers gathered into one or more compact, flat-topped, stiff-branched terminal clusters. Basal leaves deep green, deeply cut

into fine linear segments like a fringe. Stem leaves curled, finely divided, clasping the stalk at frequent intervals. Flowers composite, white, less than $\frac{1}{4}$ " across, composed of 4 or 5 small, paper white ray-flowers and few, tubular, yellowish-white disk corollas. May and June. Railroad tracks and roadsides. Not common. Named for Achilles, a hero of Homer's Iliad. The leaves, small stems and flowers have stimulant tonic properties.

Artemisia gnaphalodes Nutt. Wormwood. Silverweed.

Plants 1 to 2 feet high, easily noticed anywhere because of the strong contrast between their silvery-grey leaves and stems and the surrounding green foliage. Plants are simple stemmed at the base, more or less branched above and usually grow in small patches. Leaves simple, alternate, fairly numerous. Lower leaf-blades 2 to $4\frac{1}{2}$ " long, white-woolly beneath, less woolly and greener above, cut almost to the midrib into 3 to 7 narrowly oblong, entire lobes. Upper leaves less lobed, eventually linear and entire. Flowers composite, inconspicuous, in small, close clusters forming white woolly sprays at the end of the stem. Blossoms in late summer and fall. Widespread but not common. Named for Artemisia, the wife of Mausolus, king of Hallicarnasus and builder of a famous tomb for himself and wife.

Senecio obovatus Muhl. Ragwort. Squaw-weed.

Plants with finely ridged, hollow, twisted, few-leaved stems, 12 to 18 inches high and yellow composite flowers in loose clusters at the ends of the stems. Basal leaves simple, with blades broadly oblong or variously cut, bluntly saw-toothed, sometimes segmented, and narrowed into the long leaf stalks. Stem leaves far apart, with blades deeply cut, clasping the stem. Flowers composite, about $\frac{1}{2}$ " across, with deep yellow disk and 8 to 12 light orange-yellow ray flowers about $\frac{1}{4}$ " long. Roots fibrous. Bracts of the involucre narrow, equal, united into a narrow cup with a few short bracts at the base. Late February, March and April. In shaded ravines and on limestone ledges.

Senecio plattensis Nutt.

Ragwort

Resembles *Senecio obovatus* but the foliage is permanently covered with spidery-woolly hairs. Plant is usually slightly stouter and 1 to 3½ feet high. Blades of basal leaves oblong or ovate-oblong (sometimes ovate), some or all of them segmented, the terminal segment larger and toothed. Flowers ¾ to 1 inch across. Rays about a dozen. Bracts of involucre usually cobwebby. April and May. Shaded ravines and hillsides.

Senecio rotundus (Britton) Small

Ragwort.

Similar in general structure to *Senecio obovatus*. Root leaf-blades rounded or rounded-ovate, coarsely blunt-toothed or rarely pinnatifid, narrowed into slender petioles as long as the blades or longer. Stem leaves deeply cut, far apart, few. Rays 5-7mm. long, deep yellow. In wet soil, following rocky creek beds. February and March. The earliest of the *Senecios*. Plants usually smaller than *Senecio obovatus*.

Senecio lobatus Pers.

Golden Ragwort.

Plants similar to the above species in general appearance. Leaf-blades 1 to 4" long, slightly fleshy, deeply cut along the sides into wedged shaped coarsely-toothed lobes, and forming a rosette at the base. Stem leaves similar, alternate, far apart. Flowers composite, yellow, less than ¾ inch across, in flat topped clusters at the ends of long, slightly twisted, hollow-grooved stems. Rays about 12. March and April. Usually low, rich ground out in the open.

Senecio ampullaceus Hook.

Erect annuals, 1 to 3 feet high, with ascending branches ending in clusters of yellow composite flowers similar to the above *Senecios* in general appearance. Stem leaves simple, alternate. Blades thickish, entire or coarsely toothed, never divided, ovate to oblong, long pointed. Flowers composite, 1 to 1¼" across. Rays 7 to 9. Fruit hairy achenes, tipped by a tuft of

soft capillary bristles. In sand. March and April. Differs from the other *Senecios* in having undivided leaves.

Cirsium austrinum (Small) Thistle. "Cardo Santo"
(*Carduus austrinus* Small.

Tall, prickly plants, 1 to 3 feet high, with woolly stems branching above and bearing large, solitary, rose-purple flowers. Leaves simple, alternate. Blades green above, white-woolly beneath, lobed or wavy-segmented, the segments prickly toothed, felted with whitish-cobwebby hairs beneath. Flowers composite, rose-purple or real purple to phlox purple, about $1\frac{1}{4}$ " across, set in a cup of small, prickly-tipped bracts and singly terminating long, almost leafless, woolly or cobwebby flower stalks. Flower consists of all tubular corollas, each having 5 deep, narrow lobes. Ray flowers none. As the seeds ripen, the flower becomes a big ball of fluffy white or greyish silk. Individual seeds small, crowned by a tuft of silky plumose hairs. Grows singly or in large patches along railroad tracks, roadsides and in pastures. April to June. Very common.

Cirsium undulatum (Nutt) Spreng.

This thistle is similar to *Cirsium austrinus* but the plant does not grow as tall (1 to 2 feet), comes into blossom later, has stouter stems, thicker leaves that are felty underneath, and much larger, heavier flowers. Involucre varies from 3-4 cm in height. **Bracts** are broader and tipped with stout spines. Flower is fully twice as broad across the top as *Cirsium austrinum*. Plants grow in dry, stony soil. May to July. Comparatively rare.

Centaurea americana Nutt. Star Thistle. "Cardo del Valle".
Powder Puffs.

Erect, stout-stemmed plants with the tips of the ascending branches enlarged into a large, showy, white or lavender thistle like blossom, 2 to 4 inches across. Leaves simple, alternate. Blades gland-dotted, lanceolate, entire, 1 to 3 inches long. Flowers composite, composed of white tubular disk corollas and

a fringe of longer, lavender ray-flowers. The stout stalks enlarge at the top just below the cup of green, prickly-margined, membranous bracts that are covered with star-shaped hairs and give the involucre a scaly appearance. March to June. In dry soil. Often growing in large patches along roadsides and in pastures. Related to the popular corn-flower, *Centaurea ajanus*.

Chaptalia nutans (L.) Hemsl.

Sun-bonnet Babies.

(*Thysanthera nutans* [L.] Kuntze.)

Silver Puffs.

Early blossoming, with white to yellowish-white flowers, nodding singly on leafless woolly stalks, 2 to 4" long, and coming out of a rosette of woolly root leaves. Leaves simple, 1 to 6 inches long. Blades shallowly cut or wavy, dark green, smooth or covered with cobwebby hairs above, and white with matted woolly hairs underneath, broad above and tapering below, the blade continuing along the petiole to the base. Flowers white, fringy, about $\frac{1}{2}$ " long, contained in a woolly cup, consisting of numerous woolly, usually purplish tipped, narrow, pointed bracts of many lengths, the outer successively shorter. Ray flowers few, white. Disk corollas slightly 2-lipped and 5-lobed. January and February. In shaded ravines.

Perezia runcinata Lag.

Perezia.

Stemless plants with stiff, crisp, dull green, prickly-edged leaves and one to several, deep rose-pink flowers, rising on naked stalks out of the rosette of leaves. Leaves simple, 2 to 8 inches long, cut along the margin into round and evenly spiny-toothed lobes. Flowers composite, rose-pink to rose-purple, about 1 inch across and consisting of numerous, tubular, 2-lipped corollas, the corollas at the margin having larger lower lips. Achenes cylindrical, each with a tuft of fine hairs over $\frac{1}{4}$ " long attached at the tip. March and April. Rich, shaded soil of ledges of limestone hills of the Edwards Plateau. Rarely seen in the sandy region to the south.

*CICHORIACEAE. Chicory Family. In Small's Flora.**Sitilias multicaulis* (DC.) Greene.

False Dandelion.

"Pata de Leon".

Plants 4 to 16 inches tall, with milky juice, and lemon-yellow flowers about 2 inches across, strongly resembling the common dandelion of northern fields and lawns. Leaves largely basal, simple, 2 to 6 inches long, the margins wavy or cut into narrow or broad lobes. Flowers several, solitary on naked peduncles, and consisting entirely of yellow, strap-shaped corollas that are finely 5-toothed at the square tips. Inclosing the flower is a circle of long green bracts with peculiar, small, raised, black-tipped triangular appendages at their tips. Lower and second circle of bracts few, short, unequal in length. Fruit fluffy, pale grey balls of light, feathery plumes. Similar to the "Puff Ball" of the common dandelion. Achenes reddish, wrinkled, slender, with a tuft of brownish hairs attached to the top. March, April and May. In dry soil. Flowers close with the hot sun.

Sitilias grandiflora (Nutt.) Greene.

False Dandelion.

Similar to the above species but stems do not branch and flowers are solitary on the long simple naked stems. (Never on branching stems). Not as common as *Sitilias multicaulis*. March to July. Widespread.

Pinaropappus roseus Less.

White Dandelion.

Plants with milky sap, largely basal leaves and large white or purplish flowers similar to a common dandelion in structure and terminating long slender almost naked stems. Basal leaves simple, 2 to 4 inches long, the margins shallowly segmented into triangular lobes or entire. Stem leaves few, linear, entire, sparingly lobed. Flowers composite, solitary, white or purplish, 1 to 2 inches across, terminating almost naked stalks 6 to 18 inches long. Corollas all strapshaped, finely toothed and square at their tips. Each tiny corolla is rolled length wise into a tiny hollow tube which unfolds gradually and becomes strapshaped,

the outer ones opening first. Achenes slender, tipped by a tuft of slender bristles. Bracts of the involucre green, unequal, in several series, the outermost successively shorter, conspicuously black-tipped. Flowers close shortly after being picked. In dry soil.

Lygodesmia texana (Torr. & Gray) Greene. Flowering Straw.
Pink Dandelion. Milk Pink.
(*Lygodesmia aphylla* var. *texana* Torr. & Gray)

Pale plants, 6 to 18 inches high, with slender, brittle leafless stems and few pale pinkish-lilac flowers about 1 inch across. Stem leaves mostly reduced to mere scales. Basal leaves narrow, 4 to 6 inches long, the margins entire or varied with a few, remote, short, linear lobes. Flowers composite similar to a dandelion in structure, deep lavender, singly terminating the long, naked stem or the equally naked branches. Corollas all strap-shaped, over 1 inch long, finely 5-toothed at the square-tips. Achenes narrow, tipped with a tuft of bristles. April to July. Poor, dry, rocky hillsides.

Lactuca virosa L. Prickly Lettuce. Compass Plant.

Simple-stemmed, rigid, yellow-flowered, widely-branched plants, 2 to 3 feet tall, with milky sap and leaves that twist at their bases so as to point north and south like a compass. Leaves simple, numerous. Blades 3 to 8 inches long, the main vein underneath armed with very short spines. Margins variously cut into large, downward curving lobes, the basal lobes prolonged downward into pointed ear-like projections. Flowers composite, yellow, less than $\frac{1}{2}$ " across, consisting of 6 to 12 strap-shaped corollas, and blossoming anywhere on the many spreading branches. Flowers followed by tiny, silky tufts of whitish hairs. Achenes flattened, brown tipped by a tuft of silky hairs. May, June and July. In waste places. Flowers close with the appearance of the morning sun. Introduced from Europe.

Sonchus asper (L.) All

Sow Thistle.

Coarse, simple, hollow-stemmed, yellow-flowered plants with milky sap, and crisp leaves, 1 to 3 inches long, prickly on the shallow-lobed margins and midrib and clasping the stem with ear-like projections that form a rounded flap on each side of the stem. Flowers composite, yellow, similar to a dandelion, up to 1 inch across and consisting of all strap-shaped, pale yellow corollas. Bracts and stalk below the flower covered with few short, thick hairs, tipped by tiny, black-knobbed glands. Seeds flat, 3-ribbed on each side and with a tuft of hairs attached at the summit. March to June. A common roadside and waste place weed. Introduced from Europe.

Sonchus oleraceus L.

Sow Thistle.

Similar to *Sonchus asper* above but the upper stem leaves have pointed projections at the base on each side of the stem instead of the rounded ones which fold flat against the stems. Leaves are not as rough veiny, and lower leaves are more deeply cut always bearing a triangular terminal segment. Not as common as *Sonchus asper*. Introduced from Europe.

Taraxacum officinale Weber. Common Dandelion. Blow-ball.
(*Taraxacum taraxacum* [L.] Karst.)

A common lawn weed with a thick brown bitter root, a cluster of root leaves, and bright yellow composite flowers 1 inch or more across, singly terminating hollow flower stalks, 2 to 18 inches long. Leaves simple, 1 to 5 inches long, oblanceolate to oblong, irregularly toothed or cut into toothed lobes. Flowers composite, all the 100 to 200 corollas being strap-shaped and golden yellow, singly terminating hollow stalks varying in length according to the height of the surrounding grass or weeds. Flowers are succeeded by a silvery seed puff, 1 to 2 inches in diameter. Individual seeds each tipped by a tuft of white hair like bristles. This is a native of Greece but is introduced here and is now a common weed of all civilized parts of the world.

The root is used in medicine and should be dug while the plant is in flower. The medicine is used in the treatment of liver complaints.

Serinea oppositifolia (Raf.) Kuntze.
(*Apogon humilis* Ell.)

Dwarf Dandelion.

These are low, pale, branched plants, 2 to 12 inches high, with milky sap and flowers that look like dwarf dandelions. Leaves simple, 1 to 4 inches long, largely basal, those of the stem opposite or alternate. Blades of the basal leaves spatulate to linear, entire or irregularly and shallowly lobed. Blades of the stem lanceolate to oblong. Flowers yellow, less than 1 inch across, composite, consisting of numerous strap-shaped corollas finely 5-toothed across the square tips, and solitary on slender peduncles that are conspicuously glandular hairy just below the involucre. Achenes very small, lacking the tuft of hairs common to the true dandelions. Roots fibrous. March to May. In dry, rocky soil.

GLOSSARY.

Achene. A small dry, one-seeded, one-celled indehiscent fruit. Ex. Seeds of common sunflower.

Acute. Terminating sharply in an angle of less than 90 degrees.

Aerial. Growing in the air. Referring to above ground organs or parts.

Akene. See Achene.

Alternate. Not opposite; every other one.

Alternate leaves. Leaves attached singly at intervals along the stem.

Annual. Flowering and fruiting the year it is raised from the seed and then dying.

Anther. The enlarged portion of the stamen containing pollen. See page 258.

Apex. Tip or upper part.

Appendage. Any superadded part.

Appressed. Lying against or close to another part.

Aromatic. Fragrant, spicy; with an agreeable odor.

Ascending. Growing obliquely upward or curving upward.

Axil. The angle formed by a leaf and the stem.

Axillary flower clusters. Flower clusters in the axils of the leaves.

Axis. The part of the stem or branch which bears foliage leaves, flowers or flower parts.

Bark. The rind or outer covering of a stem outside of the wood.

Basal leaves. Leaves attached at the base of the stem.

Bearded. Bearing long hairs in tufts or over small areas.

Berry. A fruit with a fleshy pericarp. A fruit which is fleshy throughout. Ex. Tomato.

Biennial. Growing from the seed one season, flowering and dying the next.

Bilabiate. Two-lipped.

Blade. The flat expanded portion of a leaf.

Bloom. The whitish powder on some leaves, fruits etc. as the "bloom" on cabbage. A powdery or waxy substance easily rubbed off.

Bract. A more or less modified leaf subtending a flower or flower cluster, usually smaller than the foliage leaves. The parts of the involucre of a composite flower.

Bud. An undeveloped shoot. An unexpanded flower.

Bulb. A bud consisting of fleshy scales as the onion or hyacinth. Usually subterranean. Ex. Bulb of the common onion.

Bur. A spiny fruit. Ex. Cocklebur.

- Calyx.** The saucer-shaped outerpart of the flower, commonly green. See page 258. In flowers where there is no distinct corolla and calyx the colored parts are called calyx. Ex. Four o'clock.
- Capsule.** A dry fruit consisting of two or more united carpels and splitting at maturity to release the seeds.
- Carpel.** The modified leaf forming a simple ovary, or one part of a compound ovary.
- Chaff.** Thin dry membranous scales or bracts on the receptacle of composite flowers. Sunflowers have a chaffy receptacle.
- Ciliate.** Fringed with hairs on the edge.
- Cleft.** Cut about half way to the midvein or base.
- Composite flower.** See page 258.
- Compound.** Two or more similar parts united.
- Compound leaf.** One divided into separate leaflets. See page 255.
- Concave.** Hollow and curved or rounded.
- Constricted.** Narrowed.
- Corolla.** The inner usually colored parts of the flower. See page 258.
- Corymb.** A flat-topped open flower cluster with the pedicels arising from different points on the stem. Ex. Common geranium.
- Creeping.** Used where the branches run over or just below the surface of the ground and take root.
- Crenate.** Scalloped. With teeth rounded. See page 256.
- Cruciform.** Cross-shaped.
- Cuneate.** Wedge-shaped.
- Deciduous.** Falling away as the leaves of a tree in the fall. Not evergreen.
- Dehiscent.** Splitting so as to discharge contents.
- Dentate.** Toothed, the teeth projecting at right angles.
- Denticulate.** Minutely dentate.
- Diaphanous.** Permitting light to shine through.
- Dimorphism.** Occurring in two forms, as long or short-styled flowers in the same species.
- Disk.** Part of the head exclusive of the rays in a composite flower. See page 258.
- Disk flower.** One of the tubular flowers in the center of a composite flower. See page 258.
- Dissected leaf.** A leaf cut or finely divided into many segments.
- Distribution.** The geographical extent and limits of a species.
- Divided.** Lobed to the base of the midvein.
- Drupe.** A fleshy or pulpy fruit with one stone. Ex. plum and cherry.
- Elliptical.** Narrowly oval or oblong with rounded ends. See page 256.
- Elongated.** Long drawn out.

- Entire leaves.** Leaves having margins without teeth, notches or lobes.
- Epiphyte.** A plant which lodges on another but derives none of its sustenance from it. An air-plant. Ex. Lichens and Spanish Moss.
- Evergreen.** Bearing green leaves at all seasons of the year.
- Exotic.** Introduced from abroad.
- Exserted.** Projecting beyond the surrounding organs, as the stamens from a corolla.
- Feather-veined.** With veins extending from the sides of the midrib to the margins, feather-wise.
- Fertile stamen.** One which produces pollen.
- Filiform.** Threadlike. Long and slender.
- Filament.** The stalk of a stamen which bears the anther. See page 258.
- Foliaceous.** Leaflike in texture or appearance.
- Fruit.** The seed bearing part of the plant of any form. The part of the plant which bears the seed.
- Genus.** A group of species which are more like each other than like any other group.
- Glabrous.** Smooth. Not rough or hairy. Devoid of hairs.
- Glandular hairs.** Tiny hairs terminating in glands.
- Glaucous.** With a bloom. A bluish or whitish waxy layer.
- Glands.** A secreting cell or cellular structure. A word loosely used. Gray's definition—Small cellular organs which secrete oily or aromatic or other products. They are sometimes sunk in the leaves or rind, as in the Orange or Prickly Ash, sometimes on the surface of small projections; sometimes raised on hairs or bristles as in the Sweetbriar or Sundew. The name is also given to any small swellings whether they secrete anything or not.
- Globose.** Ball-like or nearly so.
- Habit.** The general appearance of a plant, best seen from a distance.
- Habitat.** The characteristic environment of any species of plant. The place where a plant naturally grows, as in water, marshes, in clay soil, etc.
- Head.** A dense more or less rounded cluster of short-stalked or sessile flowers. See page 257.
- Heart-shaped.** Ovate with two rounded lobes at base. See page 256.
- Herb.** A non-woody plant which dies down to the ground each year.
- Hood.** A concave form of petal or sepal resembling a monk's hood.
- Hypanthium.** An enlargement or development of the receptacle under the calyx shown in flowers like the evening primroses.
- Incised.** Deeply and sharply cut or notched, often irregularly.
- Indehiscent.** Not opening spontaneously. Remaining persistently closed.

Inflated. Like a bladder.

Inflorescence. A flower cluster. The flowering part of the plant especially the arrangement of a flower cluster.

Internode. Portion of stem between two nodes.

Involucre. The bracts which surround a flower cluster or head, or a single flower. See page 258.

Irregular. Used to denote flowers in which the petals are unlike in size or form.

Keel. Applied to the two lower united petals of a papilionaceous flower.

Keeled. Ridged like the keel of a boat.

Lanceolate. Shaped like a lance. Three or four times as long as broad, and tapering from the basal third to a narrow apex.

Lateral. Belonging to the side. Not terminal.

Leaflet. One single division of a compound leaf. See page 255.

Legume. A one-celled, dry fruit usually splitting in two valves when mature as the pod of the bean or pea.

Linear. A leaf several times as long as wide, with sides parallel or nearly so. See page 256.

Lip. The upper or lower division of a bilabiate corolla or calyx.

Lobe. A projection or division of a leaf.

Lobed. Divided to about the midrib, or bearing lobes.

Membraneous. Papery. Membrane-like.

Midrib. The principal usually the central vein of a leaf or leaflet.

Minute. Very small. Tiny.

Naturalized. Not native, but having become thoroughly established as a part of the flora of a region.

Nectar. The sweet secretion of the flower gathered by insects, especially bees and moths.

Netted-veined. With veins running in various directions and connecting with each other.

Node. The point on a stem at which a leaf or whorl of leaves is borne, frequently hard and thickened.

Nut. A hard, dry indehiscent, one-seeded fruit with a stony shell.

Ob. A Latin prefix used to signify inversion.

Ob lanceolate. Lanceolate tapering toward the base. See page 256.

Oblique. Unequal, slanting.

Oblong. Longer than broad and with nearly parallel sides. See page 256.

Obovate. Egg-shaped with the tip downward, inverted ovate. See page 256.

Odd pinnate. With an odd leaflet at the end. See page 255.

Opposite. On opposite sides of the stem directly across from each other.

Oval. Broadly elliptical.

Ovary. The portion of the pistil which contains the ovules. See page 258.

Ovate. Egg-shaped, with the broad end downward. See page 256.

Ovule. An undeveloped seed. The body which upon fertilization develops into a seed.

Palmate. Applied to a leaf that is lobed or divided like the fingers of the hand. See page 255.

Panicle. A loose compound flower-cluster with the lower branches longer and blooming first.

Papilionaceous. Butterfly-like; referring to the irregular corolla of the Fabaceae. Ex. Corolla of the sweet pea or common bean.

Parasite. A plant growing on and getting its nourishment from another plant. Ex. Mistletoe.

Pedicel. The stem of a single flower or of a single flower of a flower cluster.

Peduncle. The main flower stalk supporting either a flower cluster or a solitary flower.

Pendulous. More or less hanging.

Perianth. The calyx and corolla of a flower considered as a whole. Used where the calyx and corolla are colored alike or very similar. Ex. Lily.

Persistent. Leaves which remain on the branches the first year or a calyx which remains on or under the fruit as in the hawthorn or persimmon.

Perennial. Living year after year.

Petal. One of the separate parts of the corolla, commonly white or colored.

Petiole. The stalk by which the blade of a leaf is attached to the stem.

Pinnæ. The primary divisions of a twice pinnately compound leaf.

Pinnate. A leaf which bears the leaflets on both sides of a common petiole. Used with compound leaves. See page 255.

Pistil. The female organ of a flower consisting of a stigma, style and ovary. The seed-bearing organ of the flower. See page 258.

Pistillate flower. One with pistils but without stamens.

Pod. The popular name for a dry, dehiscent fruit which splits along two sides. Applied to any dry, dehiscent fruit, especially a legume.

Pollen. The yellowish dust contained in the anther.

Pubescent. Covered with short, soft hairs.

- Raceme.** An elongated flower cluster with all the pedicels about equal in length. See page 257.
- Rachis.** The axis of a spike or other body. The axis of a pinnately compound leaf.
- Ray flowers.** The outer strap-shaped corollas of a composite flower. See page 258.
- Rays.** Same as ray flowers.
- Receptacle.** The more or less enlarged tip of a stem which bears the flower parts. See page 258.
- Recurved.** Curved back or down abruptly.
- Reticulate.** Net-like. Net-veined.
- Rib.** A main or prominent leaf vein. A ridge on a fruit.
- Rootstock.** Rootlike parts of stems under ground. A prostrate or subterranean stem, usually sending out roots at the nodes.
- Scale.** A minute leaf. A reduced leaf at the base or beginning of a shoot.
- Seed.** A ripened ovule.
- Sepal.** One of the divisions of the calyx. See page 258.
- Serrate.** With teeth like a saw. With sharp teeth directed forward. See page 256.
- Sessile.** Without a stalk. Closely seated upon.
- Sheath.** The lower tubular part of a leaf inclosing the stem as in grasses.
- Shrub.** A bushy, woody growth usually branched at or near the base, less than 15 feet in height. A woody perennial usually with several main stems and smaller than a tree.
- Simple.** Undivided. Not compound. Applied to leaves. See page 255.
- Spathe.** One or more bracts which enclose a flower cluster.
- Spatulate.** Spoonshaped. Gradually narrowed toward the base from a rounded tip. See page 256.
- Species.** A group of individuals which are more like each other than they are like any other group.
- Spike.** An elongated axis which bears sessile flowers. See page 257.
- Spine.** A sharp woody or rigid outgrowth from the stem.
- Spur.** A hollow projection from a sepal or petal. See page 257.
- Standard.** The upper usually broad petal of a bonnet-shaped flower. See page 257.
- Stamen.** The organ of the flower which bears the pollen. See page 258.
- Stigma.** The tip of the pistil. The pollen lodges on the stigma.
- Stipules.** A pair of leaf like organs at the base of the petiole of some leaves.

Style. The usually slender portion of the pistil connecting the stigma and the ovary. See page 258.

Sub. A Latin prefix usually signifying somewhat, slightly or nearly.

Taproot. A root with a stout, tapering body as the common carrot.

Tendrils. A slender, leafless spirally coiled organ of attachment.

Terminal. At the extreme end.

Ternately. In threes.

Thorn. A stout spine. A stiff, woody, sharp-pointed projection.

Trifoliate. Applied to compound leaves having three leaflets.

Trifoliolate. Same as trifoliate.

Tree. Usually defined as a plant with a woody stem, unbranched at or near the base, and reaching a height of at least 15 feet.

Tuber. A short, thickened underground stem having buds or "eyes".

Ex. Irish potato.

Twice compound. Term applied to leaves. See page 255.

Umbel. A flat-topped flower cluster in which all the pedicels arise from a common point, the outer flowers blooming earliest.

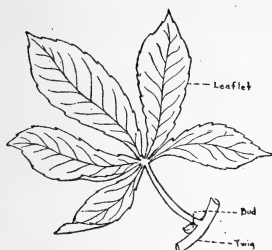
Valve. One of the segments into which a capsule or pod splits.

Veins. The smaller branches of vascular tissue forming the framework of the leaf.

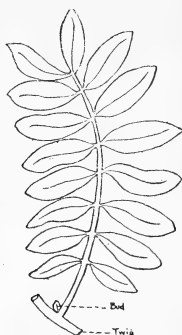
Viscid. Glutinous. Sticky.

Whorl. A cluster of leaves or other organs which are arranged in a circle around a common axis. Ex. Leaves of the Oleander.

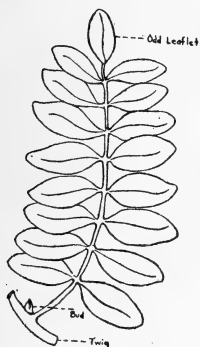
TYPES AND VEINING OF LEAVES



PALMATELY COMPOUND LEAF



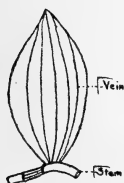
ONCE PINNATELY COMPOUND LEAF WITHOUT ODD LEAFLET



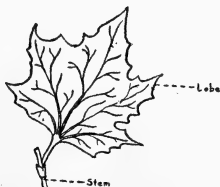
ONCE PINNATELY COMPOUND LEAF
WITH ODD LEAFLET



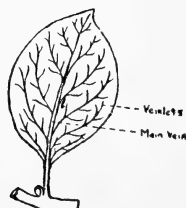
TWICE PINNATELY
COMPOUND LEAF



SIMPLE LEAF PARALLEL VEINED

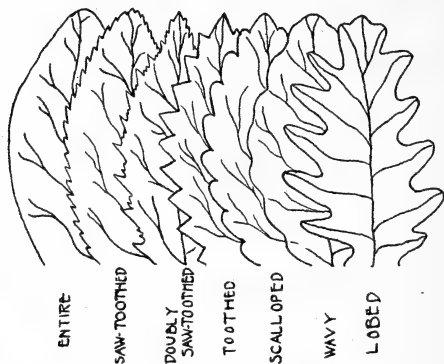


SIMPLE NETTED-VEINED LEAF
WITH MORE THAN ONE MAIN VEIN AT BASE

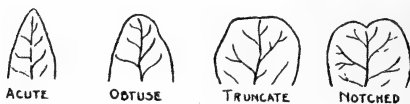


SIMPLE LEAF NETTED VEINED
WITH ONE MAIN VEIN AT BASE

MARGINS OF LEAVES



TIPS OF LEAVES



FORMS OF LEAVES



LINEAR



LANCE



OBLONG



ELLIPTICAL



OVATE



HEART-SHAPED



ROUND



WEDGE-SHAPED

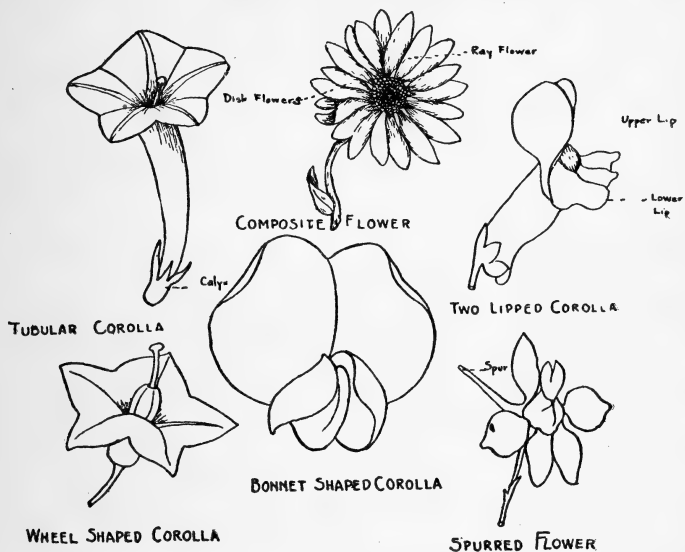


SPATULATE

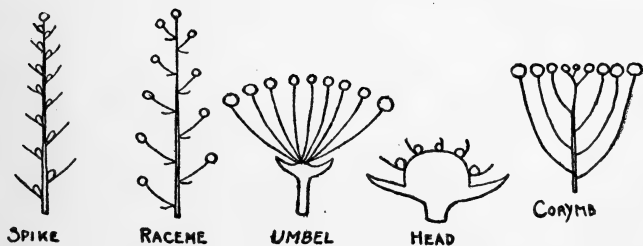


OBOVATE

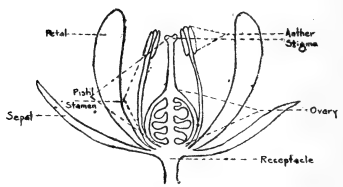
TYPES OF FLOWERS



DIAGRAMS OF INFLORESCENCE



PARTS OF A FLOWER

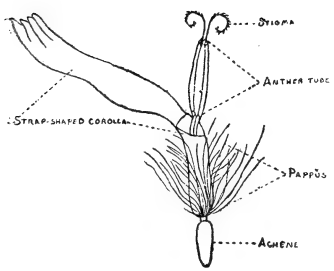


SIMPLE FLOWER

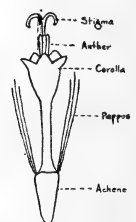


COMPOSITE FLOWER

Copy from Young's "Key to Genera and Families of the Wild Plants of Austin Texas"



RAY FLOWER OF A COMPOSITE



DISK FLOWER OF A COMPOSITE

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